JVC

SERVICE MANUAL

DIGITAL Hi-Fi STEREO VIDEO CASSETTE RECORDER VHS PAL

HR-D530E/EG

digital

HQ
High Quality

SPECIFICATIONS

Format : VHS PAL standard with Hi-Fi audio
Video recording system : Rotary two-head helical scan system with slant double-azimuth combination video heads
Hi-Fi audio recording system : Deep-layer recording system conforming to stereo Hi-Fi VHS standard
No. of audio channels : 2 Hi-Fi audio channels
1 normal audio channel
Video signal system : PAL colour and CCIR monochrome signals, 625 lines
Tape width : 12.65 mm
Tape speed (SP) : 23.39 mm/sec
(LP) : 11.70 mm/sec
Maximum recording time (SP) : 240 min. with E-240 video cassette
(LP) : 480 min. with E-240 video cassette
Temperature
Operating : 5°C to 40°C
Storage : −20°C to 60°C
Power requirement : 220 V∿, 50/60 Hz
Power consumption : 41 W

Video
Input : 0.5 to 2.0 Vp-p, 75 ohms, unbalanced
Output : 1.0 Vp-p, 75-ohms, unbalanced
Signal-to-noise ratio : 43 dB (Rohde & Schwarz noise meter) with BILDSCHÄRFE control at centre position
Horizontal resolution : 250 lines with BILDSCHÄRFE control at centre position

Audio
Input : Mic: −67 dBs, high impedance, unbalanced
AUDIO EING. connector (RCA x 2): -8 dBs, 50 k-ohms, unbalanced
AUDIO/VIDEO socket (21-pin Peri connector): −3.8 dBs (CENELEC standard), 10 k-ohms, unbalanced
Output level : AUDIO/VIDEO socket (21-pin Peri connector): −3.8 dBs (CENELEC standard), high impedance load
AUDIO AUSG. connector (RCA x 2): −6 dBs, high impedance load
Output impedance : Less than 1 k-ohm, unbalanced
Signal-to-noise ratio : More than 40 dB
Frequency range : 70 Hz to 10.000 Hz

Hi-Fi audio
Frequency response : 20 Hz – 20,000 Hz
Dynamic range : More than 90 dB
Wow and flutter : Less than 0.005 % WRMS

TV tuner/RF section
Channel storage capacity : 48 channels
Aerial input : VHF 47 – 89 MHz
104 – 300 MHz
302 – 470 MHz
UHF 470 – 862 MHz
Aerail output : UHF channels 32 – 40 (Adjustable)

Digital clock/timer
Clock display : 24-hour fluorescent digital display with day and date indication
Reference frequency : Quartz controlled
Start time setting : Within one year
Programming capacity : 8 programmes
Dimensions : 435 mm(W) x 95 mm(H) x 339 mm(D)
Weight : 8.3 kg
Provided accessories : Aerial cable,
Infrared remote control,
"R6"-size battery x 2,
Audio cable (RCA-RCA)

Specifications shown are for SP mode unless otherwise specified.
Design and specifications subject to change without notice.

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No. 82025
January 1988

NOTE: For a technical description, please refer to Technical Guide VTG82013 HR-D530 PAL.

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Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded (▨) parts are critical for safety.
   Replace only with specified part numbers.
   Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

3. Fuse replacement caution notice.
   Caution for continued protection against fire hazard.
   Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:

1) Insulation Tape	3) Spacers	5) Barrier
2) PVC tubing	4) Insulation sheets for transistors	

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

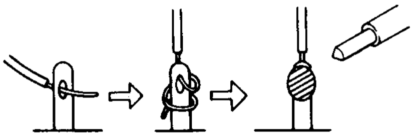


Fig. 1

7. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10–15 kg of force in any direction will not loosen it.

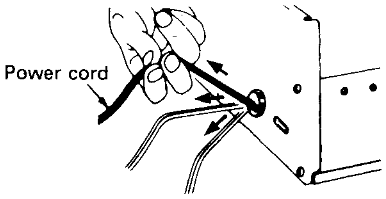


Fig. 2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
    In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.
    1) **Connector part number** : E03830-001
    2) **Required tool** : Connector crimping tool of the proper type which will not damage insulated parts.
    3) **Replacement procedure**
       (1) Remove the old connector by cutting the wires at a point close to the connector.
       Important : Do not reuse a connector (discard it).

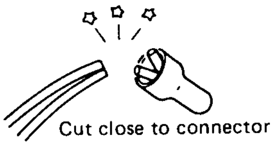


Fig. 3

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

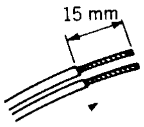


Fig. 4

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

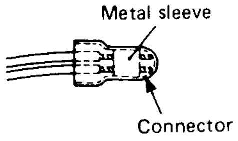


Fig. 5

(4) As shown in Fig. 6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

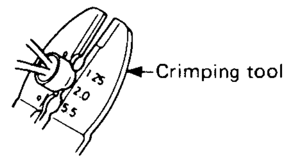


Fig. 6

(5) Check the four points noted in Fig. 7.

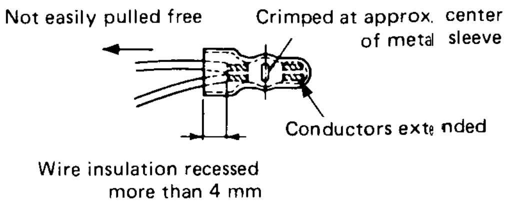

Not easily pulled free
Crimped at approx. center of metal sleeve
Conductors extended
Wire insulation recessed more than 4 mm

Fig. 7

● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions, Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. **Insulation resistance test**
   Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

2. **Dielectric strength test**
   Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

3. **Clearance distance**
   When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

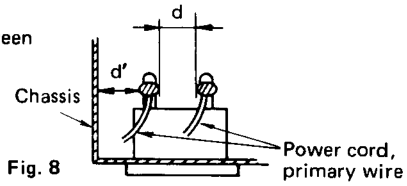


Fig. 8

4. **Leakage current test**
   Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).
   Measuring Method: (Power ON)
   Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

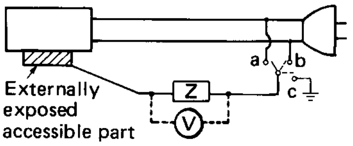


Fig. 9

5. **Grounding (Class I model only)**
   Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).
   Measuring Method:
   Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

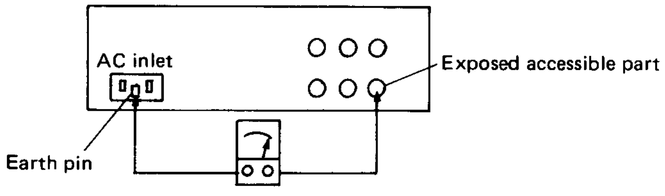


Fig. 10

Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	Z ≦ 0.1 ohm
Europe & Australia	Z ≦ 0.5 ohm

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	R ≧ 1 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3 mm
100 to 240 V			AC 1.5 kV 1 minute	d, d' ≧ 4 mm
110 to 130 V	USA & Canada	–	AC 900 V 1 minute	d, d' ≧ 3.2 mm
110 to 130 V 200 to 240 V	Europe & Australia	R ≧ 10 MΩ /500 V DC	AC 3 kV 1 minute (Class II) AC 1.5 kV 1 minute (Class I)	d ≧ 4 mm d' ≧ 8 mm (Power cord) d' ≧ 6 mm (Primary wire)

Table 1 Specifications for each region

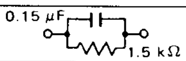
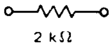
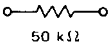
AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan	1 kΩ	i ≦ 1 mA rms	Exposed accessible parts
110 to 130 V	USA & Canada	 0.15 μF 1.5 kΩ	i ≦ 0.5 mA rms	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia	 2 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Antenna earth terminals
		 50 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Other terminals

Table 2 Leakage current specifications for each region

Note: These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

SECTION 1
MECHANISM ADJUSTMENT

1.1 GENERAL

1.1.1 Precautions

IMPORTANT:

1. Disconnect unit from power before removing or soldering components.
2. When removing a fastener (screw, washer, etc.), be careful not to drop it into the mechanism. If a fastener should be dropped, be sure to retrieve it.
3. The tape transport mechanism has been precisely adjusted at the factory and ordinarily does not require readjustment.
4. When removing a part, be very careful not to damage or displace other parts. (Be especially careful with the tape guides and rotary video head drum.)
5. For service procedures that call for operation of the set when the cassette housing is separated from the main-deck, perform as below.

1) Remove the cassette housing from the main-deck.
2) Disable the photo transistor sensor (END SENSOR) on the main-deck by applying an opaque cover.
3) The desired modes can be obtained by using the operation switches.

1.1.2 Required test equipment, fixtures and tools

For proper mechanical adjustment, the following test equipment, fixtures and tools are strongly recommended. Without them, a long trial-and-error period would be necessary, resulting in possible damage. In addition, general-purpose tools are required.

1. Test equipment required:
   Color television or monitor
   Oscilloscope: Wide-band, dual trace, triggered, delayed sweep
   Recording tape
   Alignment tapes

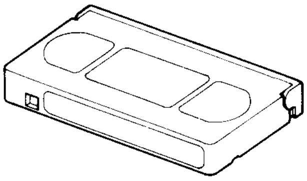
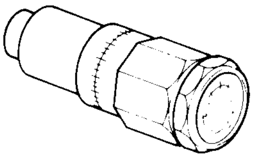
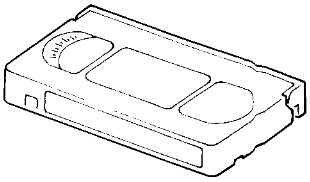
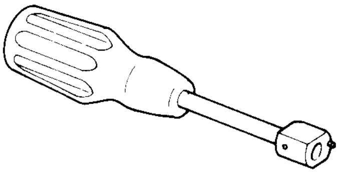
Alignment tape MH-2, MH-2L, MH-F2 	Torque gauge assembly PUJ48075-2 	Back tension cassette gauge PUJ48076-2 
A/CTL head position tool PUJ47351-2 		

Table 1-1-1 Fixtures and tools

1.1.3 Disassembly

1. Top cover
1) Take out five screws from the right, left and rear sides of the set.
2) Shift the top cover a little to the rear direction, then remove it upwards.

2. Front panel
1) Remove the top cover.
2) Bend three portions (A) of the front panel upwards to disengage them from the chassis.
3) Then pull the front panel outwards.
4) Disengage three portions (B) of the front panel from the chassis, then remove the front panel.

3. Bottom cover
1) Remove the top cover.
2) Loosen the screws of the two feet, then pull out the feet from the chassis.
3) Take out four screws, then remove the bottom cover.

4. Cassette housing door
1) Pull the center of the cassette housing door to bend it out, then remove the cassette housing door. Use care regarding the torsion spring on the left.

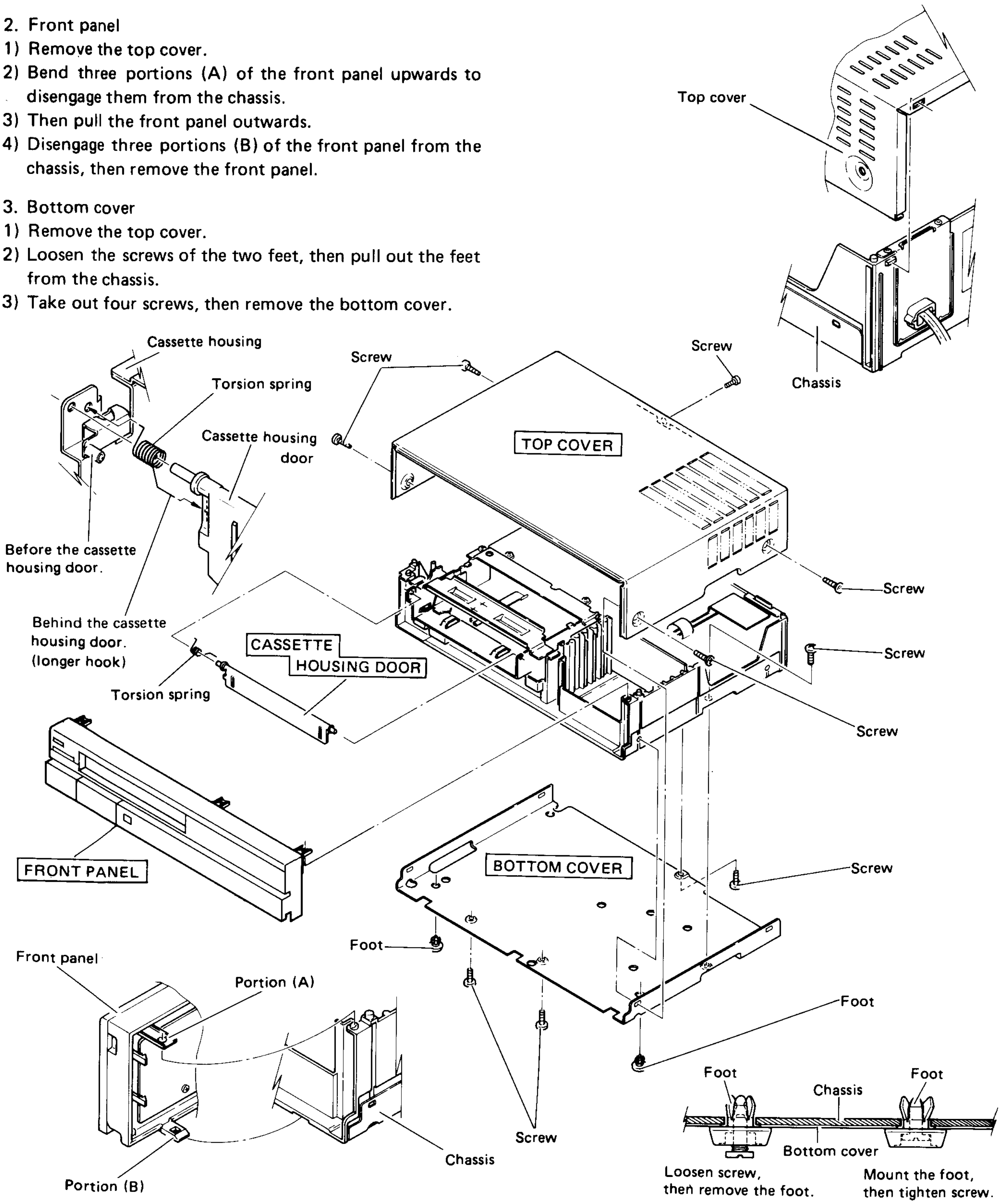

Top cover
Chassis
Screw
Cassette housing
Torsion spring
Cassette housing door
Before the cassette housing door.
Behind the cassette housing door. (longer hook)
Torsion spring
Screw
TOP COVER
CASSETTE HOUSING DOOR
Screw
Screw
Screw
FRONT PANEL
BOTTOM COVER
Screw
Foot
Foot
Front panel
Portion (A)
Portion (B)
Chassis
Screw
Foot
Chassis
Foot
Bottom cover
Loosen screw, then remove the foot.
Mount the foot, then tighten screw.

Fig. 1-1-1 Removal of external covers

1.1.4 Layout of main parts

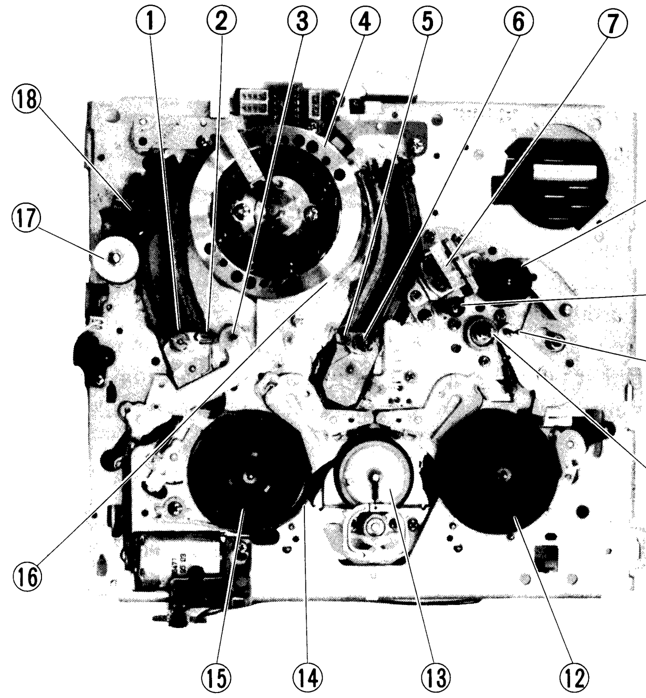


Fig. 1-1-2 Top view of main-deck

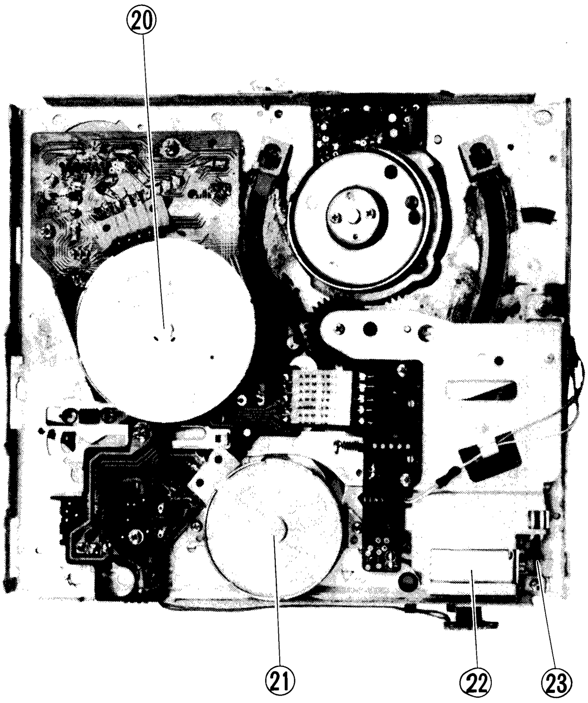


Fig. 1-1-3 Bottom view of main-deck

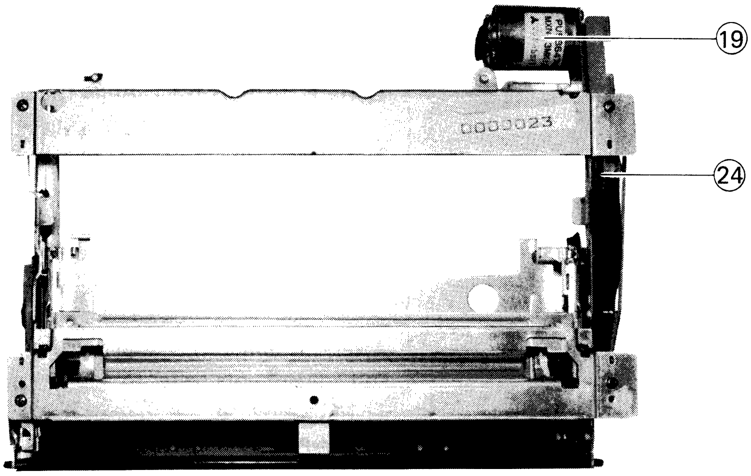
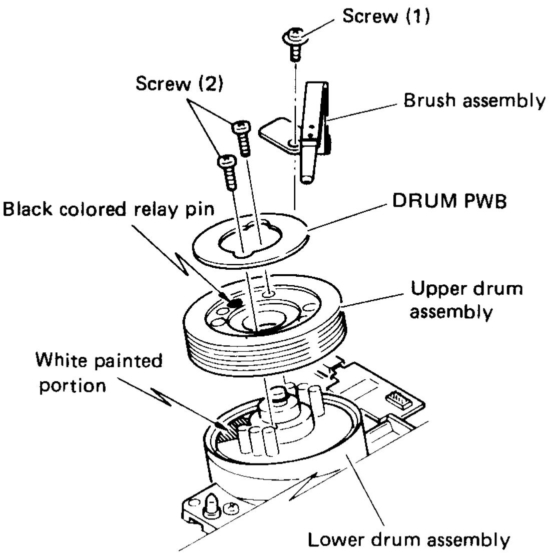
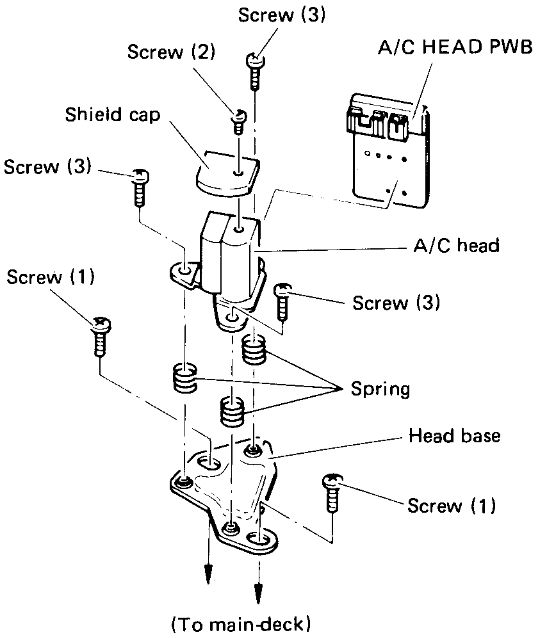
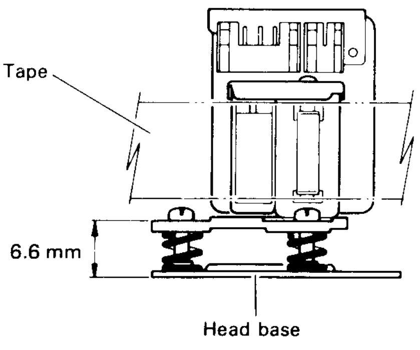


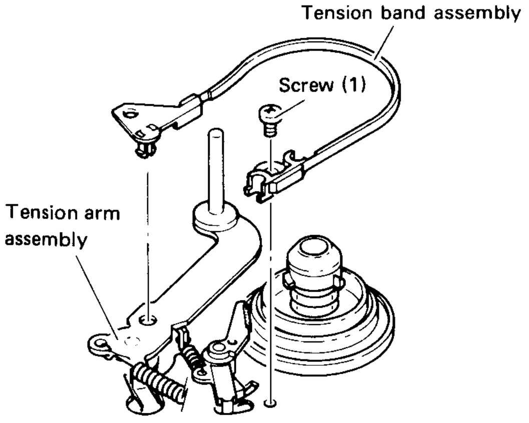
Fig. 1-1-4 Cassette housing

1. Supply guide roller
2. Supply slant pole
3. Tension pole
4. Upper drum
5. Take-up slant pole
6. Take-up guide roller
7. A/C head
8. Pinch roller
9. Take-up guide pole
10. Guide arm
11. Capstan
12. Take-up reel disk
13. Reel idler
14. Tension band
15. Supply reel disk
16. Lower drum
17. Impedance roller
18. Full erase head
19. Cassette motor
20. Capstan motor
21. Reel motor
22. Mode motor
23. Mode belt
24. Cassette belt

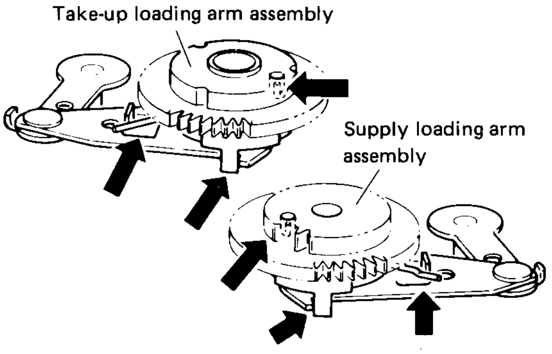
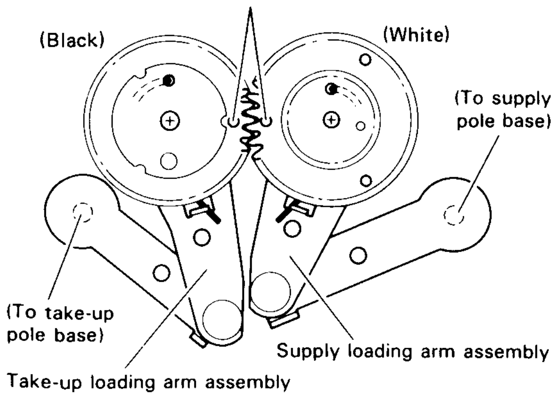
1.2 MAIN ASSEMBLY REPLACEMENT

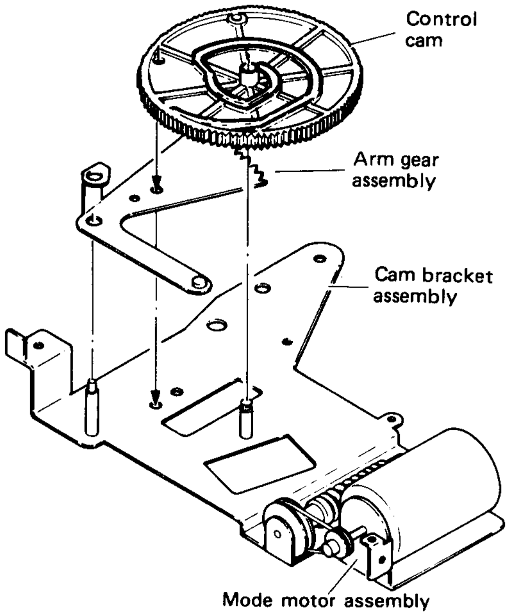
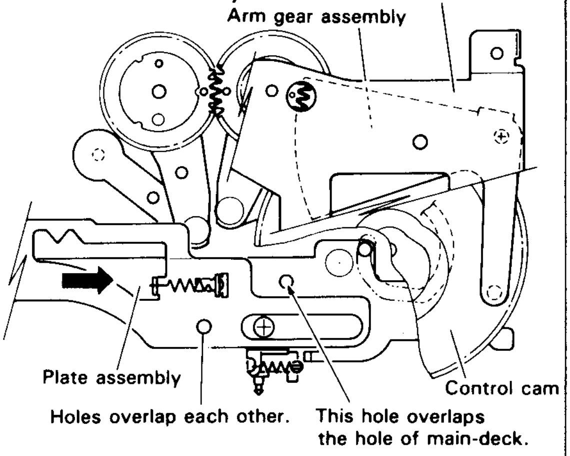
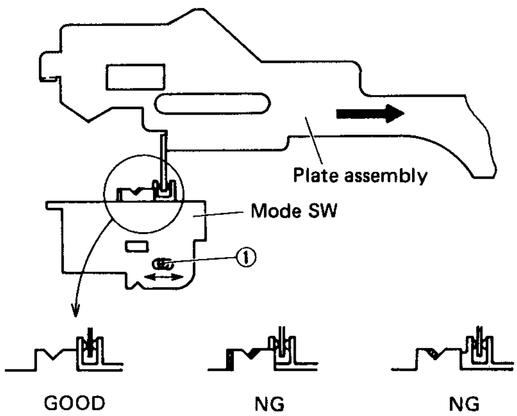
No.	Item	Adjustment parts	Operating mode	Description
1	Upper drum assembly			**Note:** When installing the new upper drum, use care not to touch the video heads. If heads are soiled, clean with a soft, finely woven cotton cloth or chamois that has been moistened in alcohol.
	– Drum removal –  Screw (1) Screw (2) Brush assembly Black colored relay pin DRUM PWB Upper drum assembly White painted portion Lower drum assembly **Fig. 1-2-1** Upper drum assembly			Hold lightly against the heads and turn the drum clockwise. By no means clean with a vertical stroke. 1) Refer to Fig. 1-2-1. Take out screw (1) and remove the brush assembly. 2) Use a desoldering tool or desoldering braid to unsolder the upper drum board. 3) Take out two screws (2) and raise the upper drum to remove it together with the upper drum board. (If this drum is to be reinstalled, use care not to touch or damage the heads.)
	– Installation –			1) Refer to Fig. 1-2-1. Align the black relay pin of the new upper drum with the white marking of the lower drum. 2) Reinsert screws (2) and tighten them in a balanced manner. 3) Reinstall and solder the upper drum board. 4) Clean the drum assemblies (see above note). 5) Reinstall the brush assembly and secure with screw (1).
	– Checks and adjustments –			After installing the upper drum, perform the following checks and adjustments (refer to appropriate Sections of this Manual). 1) FM waveform 2) Servo circuit 3) Video circuit 4) FM audio circuit

No.	Item	Adjustment parts	Operating mode	Description
2	A/C head (Audio/Control head)			
	– A/C head removal –  Screw (3) Screw (2) A/C HEAD PWB Shield cap Screw (3) A/C head Screw (1) Screw (3) Spring Head base Screw (1) (To main-deck) **Fig. 1-2-2** A/C head			1) Disengage connectors attached to the A/C head board. 2) Take out two screws (1) and remove the A/C head together with the head base. 3) Remove the A/C head board from the A/C head. 4) Take out screw (2) and remove the shield cap from the A/C head. 5) Take out three screws (3) and remove the A/C head from the head base. Use care regarding the three springs.
	– Replacement –  Tape 6.6 mm Head base **Fig. 1-2-3** A/C head height			1) Install the A/C head by reversing the steps of 1.2.2. 2) Temporarily set the A/C head height above the head base for 6.6 mm (see Fig. 1-2-3).
	– Checks and adjustments –			1) Use a spare tape (not Alignment tape) and confirm proper operation of the tape transport (see Section 1.5). 2) Perform interchangeability adjustment (see Section 1. 6).

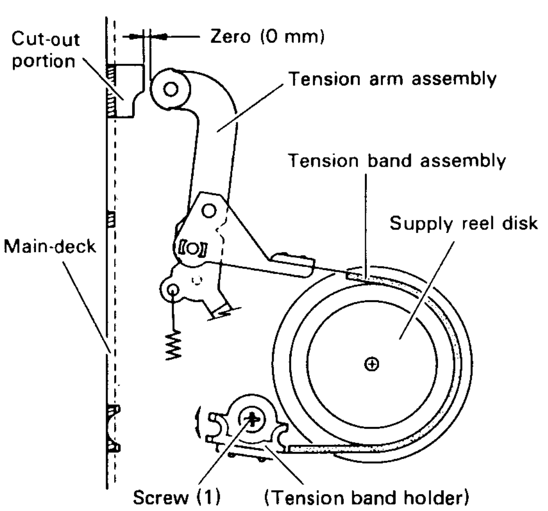
No.	Item	Adjustment parts	Operating mode	Description
3	Tension band assembly  Tension band assembly Screw (1) Tension arm assembly **Fig. 1-2-4** Tension band assembly			1) Take out screw (1) and disengage the tension band assembly from the tension arm assembly (see Fig. 1-2-4). 2) Remove and replace the tension band assembly. 3) Perform tension pole position adjustment (see Section 1.4).

1.3 ASSEMBLY PROCEDURE OF MECHANISM

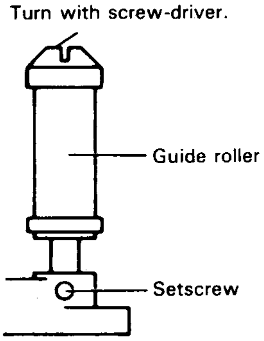
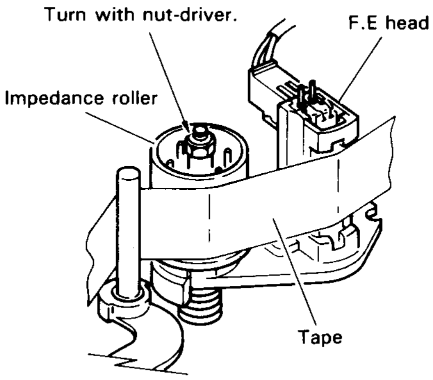
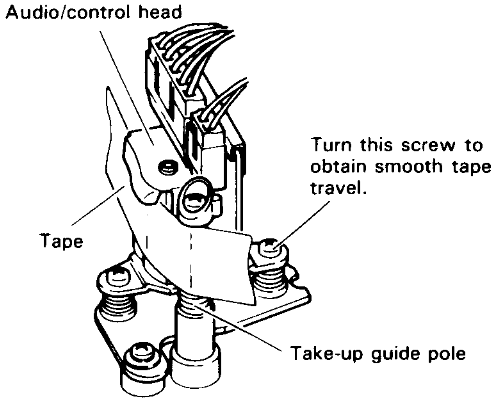
No.	Item	Adjustment parts	Operating mode	Description
	A close relationship exists between the mode select switch and the mechacon circuit. Therefore, the mode select switch and control arm engagement determines the overall mechanical operations of the levers, gears, rollers, etc. If these parts are not properly positioned, the video deck becomes stalled in the unloading or Stop mode.			
1	Loading arm assemblies  Take-up loading arm assembly Supply loading arm assembly **Fig. 1-3-1** Loading arm assembly (1)  Holes confront each other. (Black) (White) (To supply pole base) (To take-up pole base) Supply loading arm assembly Take-up loading arm assembly **Fig. 1-3-2** Loading arm assembly (2)			These assemblies are comprised of loading gears, torsion springs and loading arms. 1) Refer to Fig. 1-3-1 and install the loading arm assemblies correctly. 2) The take-up and supply loading arm positions with respect to the loading gear holes are indicated in Fig. 1-3-2. This configuration is important to allow shifting to the next operation.

No.	Item	Adjustment parts	Operating mode	Description
2	Control cam  Control cam Arm gear assembly Cam bracket assembly Mode motor assembly **Fig. 1-3-3** Control cam			1) Set the arm gear assembly on the cam bracket assembly so that the hole of the arm gear assembly overlaps the hole of the cam bracket assembly. 2) Install the control cam on the cam bracket assembly so that the hole of the control cam overlaps the hole which is indicated in the step 1), as shown in Fig. 1-3-3. Do not turn the control cam from this position for the next step.
3	Cam bracket assembly  Cam bracket assembly Arm gear assembly Plate assembly Control cam Holes overlap each other. This hole overlaps the hole of main-deck. **Fig. 1-3-4** Cam bracket assembly			1) Push and hold the plate assembly so that the hole of the plate assembly overlaps the hole of the main-deck, as shown in Fig. 1-3-4. 2) Then mount the cam bracket assembly.
4	Mode switch position  Plate assembly Mode SW ① GOOD NG NG **Fig. 1-3-5** Mode switch			1) Engage the plate assembly and mode switch as shown in Fig. 1-3-5. Partially tighten screw (1) to where the switch can still be shifted for adjusting the position. 2) Press the plate assembly toward the right to where the holes are overlapped as in Fig. 1-3-4. Insert a jeweler's screwdriver into the holes to keep them aligned. 3) Shift the mode switch to align the V-notch as indicated in Fig. 1-3-5. Then tighten screw (1) to secure. 4) Remove the jeweler's screwdriver, then reinstall and solder the circuit board.

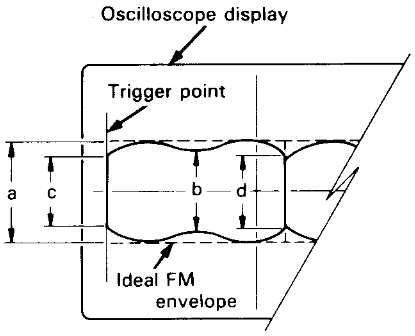
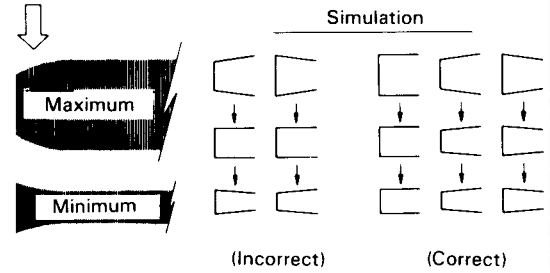
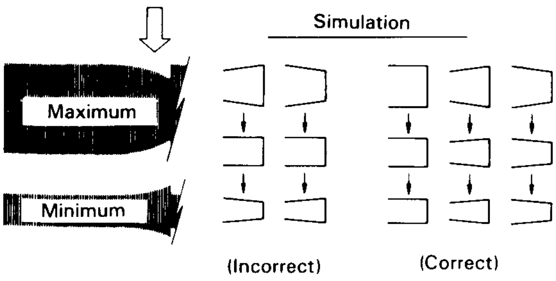
1.4 CONFIRMATION AND ADJUSTMENT

No.	Item	Adjustment parts	Operating mode	Description
1	Tension pole position  Cut-out portion Zero (0 mm) Tension arm assembly Tension band assembly Supply reel disk Main-deck Screw (1) (Tension band holder) **Fig. 1-4-1** Tension pole position			1) Without a cassette tape, set for the Play mode (see Section 1.1). 2) Refer to Fig. 1-4-1. Slightly loosen screw (1). Adjust the tension band holder position for 0 mm (gentle contact) separation between the tension arm and cutout position. 3) Tighten screw (1) to secure the tension band holder. 4) Use the back tension cassette gauge and set for the Play mode. 5) Check for a scale reading between 25 and 75. 6) If outside this range, clean the tension band contacting portions of the supply reel disk with alcohol, or if necessary, replace the tension band assembly.
2	Take-up torque			1) Without a cassette tape, set for the Play mode (see Section 1.1). 2) Set the torque gauge on the take-up reel disk. 3) Grasp the torque gauge lightly so that it rotates and read the value when the scale matches the indicator needle. Confirm a value between 45 and 155. 4) If outside this range, clean the rubber portion of the idler arm with alcohol, or if necessary, replace the idler arm assembly.

1.5 TAPE TRANSPORT CHECKS AND ADJUSTMENT PREPARATIONS

No.	Item	Adjustment parts	Operating mode	Description
	The tape transport system has been precision-adjusted at the factory and ordinarily does not require readjustment. However, adjustment may become necessary after long term usage or after replacing parts that affect the tape transport. The following steps mainly cover preparations for the interchangeability adjustments of Section 1.6.			
1	Guide roller  Turn with screw-driver. Guide roller Setscrew **Fig. 1-5-1** Guide roller			1) During interchangeability adjustments, the guide roller is turned with a flat-blade screwdriver to adjust its height and correct FM waveform linearity. Use a metric hex key (1.25 mm) to slightly loosen the setscrew at the base of the guide roller (see Fig. 1-5-1). Loosen the setscrew just sufficiently to allow the guide roller to be turned. If too loose, tape transport will be too unstable to permit correct adjustment.
2	Impedance roller  Turn with nut-driver. F.E head Impedance roller Tape **Fig. 1-5-2** Impedance roller			1) This compensates for tape running stability between the cassette and head drum. After adjusting the supply guide roller, the impedance roller height is adjusted for smooth tape transport at the lower flange. 2) Use a metric nutdriver (5.5 mm) to adjust by turning the upper nut (see Fig. 1-5-2). However, note that excess turning can disturb the FM waveform stability.
3	A/C head (audio/control head)  Audio/control head Turn this screw to obtain smooth tape travel. Tape Take-up guide pole **Fig. 1-5-3** A/C head			1) After adjusting the take-up guide roller, adjust the A/C head inclination for smooth tape travel at the lower flange of the take-up guide pole. Refer to Fig. 1-5-3.

1.6 INTERCHANGEABILITY CHECKS AND ADJUSTMENTS

No.	Item	Adjustment parts	Operating mode	Description
	Before using costly Alignment tape, use a spare tape and confirm correct operation of the tape transport.			
1	FM waveform $\frac{b}{a} \geqq 0.7,\ \frac{c}{a} \geqq 0.5$ and $\frac{d}{a} \geqq 0.5$  Oscilloscope display Trigger point a c b d Ideal FM envelope **Fig. 1-6-1** FM envelope  Drum entrance Simulation Maximum Minimum (Incorrect) (Correct) **Fig. 1-6-2** Drum entrance  Drum exit Simulation Maximum Minimum (Incorrect) (Correct) **Fig. 1-6-3** Drum exit			1) Connect oscilloscope to the FM OUT testpoint of the video playback circuit. Trigger the oscilloscope externally with the signal from the drum flipflop (D-FF or FF) testpoint. Set the trigger slope to minus (–). 2) Play the MH-2 Alignment tape and adjust the tracking for maximum FM waveform output. Refer to Fig. 1-6-1. Confirm the relationships indicated in the figure for maximum output (a), minimum center output (b), minimum output at the drum intake (c) and minimum output at the drum output (d). 3) Adjustment is required if the above specifications are not fulfilled. Even when these are fulfilled, check that the FM waveform varies linearly overall. If not, slight deviation in tracking will cause a large proportional level drop to result in noise appearing in the picture. Therefore, in this condition, proceed to the following checks and perform adjustments where necessary. 4) Operate the tracking adjustment between minimum and maximum outputs of the FM waveform. Observe the portion of the waveform corresponding to the drum intake (see Fig. 1-6-2). As the tracking is adjusted, although the gain may increase or decrease, the geometric shape of this part of the waveform should remain consistent. If the shape varies, as shown by the incorrect examples in the figure, carefully perform adjustment of the supply guide roller height. 5) Next observe the portion of the waveform corresponding to the drum output (see Fig. 1-6-3), while operating the tracking adjustment. This should also vary only in gain, but not in shape. If the shape varies, as shown by the incorrect examples in the figure, carefully perform adjustment of the take-up guide roller height. 6) Check the overall FM waveform. Fine-adjust both guide rollers so that variation is as minimum and linear as possible. 7) Observe the tape travel at the guide rollers and guide poles. Confirm absence of tape creasing or curling. Confirm that the tape properly rides at the lower flange of the supply guide pole. Carefully adjust the guide pole height if necessary. This adjustment is important and affects FM waveform response. If creasing or curling is observed at the take-up guide pole, carefully adjust the audio/control head inclination so that the tape rides properly at the lower flange of the guide pole. Finally, again check the FM waveform.

<table>
<tr><th>No.</th><th>Item</th><th>Adjustment parts</th><th>Operating mode</th><th>Description</th></tr>
<tr><td rowspan="2"></td><td colspan="4">Proper adjustment of the A/C head position is important for ensuring adequate audio output and S/N. Severe misalignment can prevent control signal pick-up and cause servo instability. Precise adjustment is particularly important for models that include tape indexing and addressing features, since these rely on control signal coding for operation.
To observe the audio signal, connect an oscilloscope to the test point (AUDIO OUT) of the audio circuit, or directly to the audio output terminal. In some cases, monitoring the sound with headphones may be helpful.</td></tr>
<tr><td colspan="3">A/C head adjustments

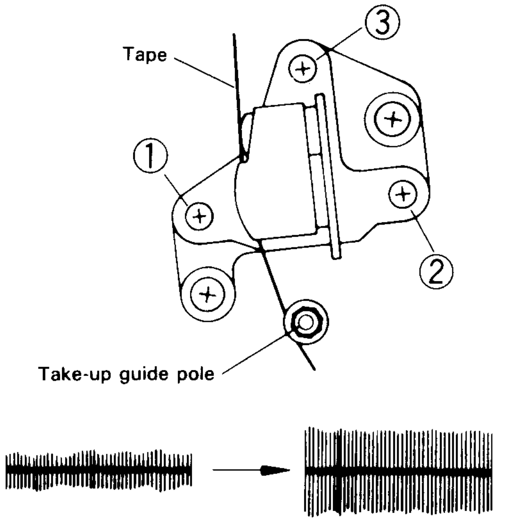
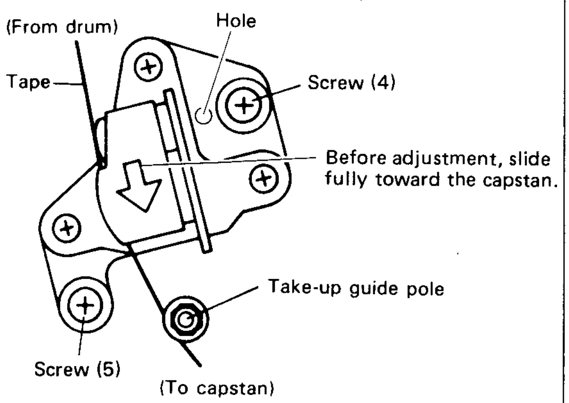



Fig. 1-6-4 A/C head</td><td>1) Play the stairstep (audio 6 kHz) portion of the MH-2 Alignment tape.
2) Adjust screw (3) (Fig. 1-6-4), which is the azimuth adjustment, for maximum output.
3) Turn screws (1), (2) and (3) by small and equal increments (about 45° at a time) to adjust the A/C head height for maximum audio output. Slightly raise and lower the height to confirm the maximum output position.
4) Observe the FM waveform and tighten the guide roller setscrews. Use care not to disturb the height adjustments. Then again confirm the FM waveform.</td></tr>
<tr><td rowspan="2">3</td><td colspan="4">This determines the distance between the sound and picture information on the tape. Correct adjustment is important for providing synchronization of picture and sound in the program. Incorrect adjustment is particularly noticeable in the slow speed (LP) mode.
Observe the FM waveform by connecting an oscilloscope to the video play-back circuit test point (FM OUT). Trigger the oscilloscope externally with the drum flipflop signal. Use plus (+) trigger to view the CH-2 waveform. Set the tracking adjustment to the neutral (AUTO) position.</td></tr>
<tr><td colspan="3">Control head phase (X value)


(From drum)
Hole
Tape
Screw (4)
Before adjustment, slide fully toward the capstan.
Take-up guide pole
Screw (5)
(To capstan)

Fig. 1-6-5 Control head phase</td><td>1) Play the stairstep portion of the MH-2 Alignment tape.
2) See Fig. 1-6-5. Slightly loosen screws (4) and (5). Set the A/C head positioning tool over screw (4) with the pin of the tool inserted into the indicated hole.
3) Turn the tool counterclockwise to shift the A/C head fully toward the capstan direction.
4) While observing the CH-2 FM waveform, gradually turn the tool clockwise. Stop at the peak output position and tighten screw (5). Remove the tool and tighten screw (4).
5) Replace alignment tape MH-2L with MH-2, play back the stairstep segment of the alignment tape MH-2L.
6) Operate the tracking adjustment and confirm that the maximum FM waveform is obtained at the neutral setting.
7) If the FM output peak is not obtained at tracking neutral position, shift the A/C head at the FM output peak nearest to this position.</td></tr>
</table>

No.	Item	Adjustment parts	Operating mode	Description
4	Final checks			1) Supply a video or TV signal (monochrome is preferable). Use a spare tape and record and play back. Confirm that the play-back FM signal conforms to the parameters indicated in Fig. 1-6-1. Check for both SP and LP modes. 2) Connect the oscilloscope to the test point (FM OUT) of the FM audio play-back circuit. Play the stairstep portion (which includes the FM audio carrier) of the MH-F2 Alignment tape. Confirm absence of severe drop in FM waveform level. 3) Perform the checks and, if necessary adjustments, of the Electrical Adjustments Section for the servo, video and audio (and FM audio) circuits.

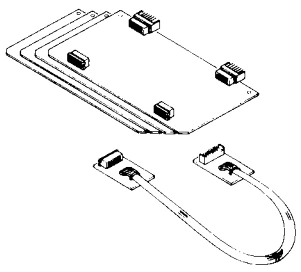
SECTION 2
ELECTRICAL ADJUSTMENTS

2.1 PREPARATION

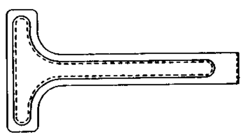
Electrical adjustments are required after replacing circuit components and certain mechanical parts.
It is important to perform these adjustments only after all repairs and replacements have been completed. Also, do not attempt these adjustments unless the proper equipment is available.

2.1.1 Required test equipment

1. Color television or monitor
2. Oscilloscope: wide-band, dual-trace, triggered delayed sweep
3. Frequency counter
4. Audio oscillator
5. Audio voltmeter
6. Digital voltmeter
7. Signal generator: RF/IF sweep/marker
8. Signal generatpr: PAL color bar
9. Recording tape
10. Alignment tapes: (MH-2, MH-F2)
11. Board extender (PTU93002D)



- TIMER, DEMODULATOR, DIGITAL, FMA, SERVO, MECHACON, REGULATOR BOARDS
- EXTRACTOR for boards



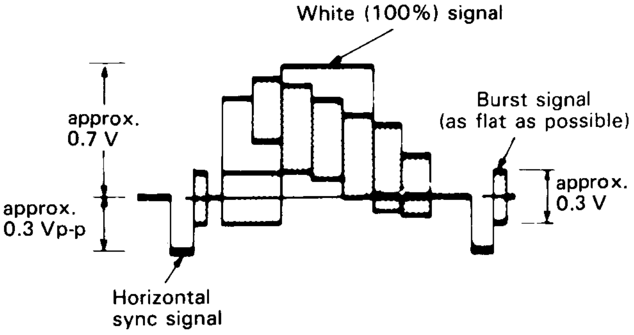

White (100%) signal
Burst signal (as flat as possible)
approx. 0.7 V
approx. 0.3 Vp-p
approx. 0.3 V
Horizontal sync signal

Fig. 2-1-1 Color bar signal of pattern generator

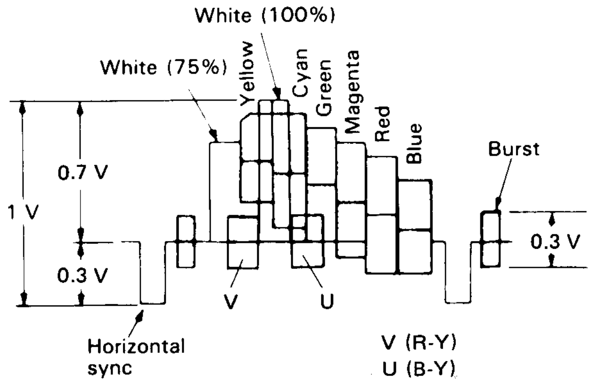

White (100%)
White (75%)
Yellow
Cyan
Green
Magenta
Red
Blue
Burst
0.7 V
1 V
0.3 V
0.3 V
V
U
Horizontal sync
V (R-Y)
U (B-Y)

Fig. 2-1-2 Color bar signal waveform

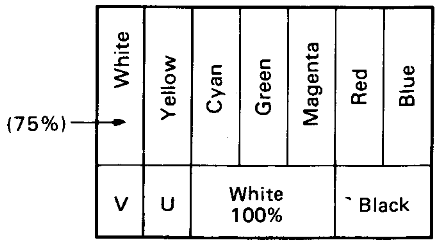

White
Yellow
Cyan
Green
Magenta
Red
Blue
(75%)
V
U
White 100%
Black

Fig. 2-1-3 Color bar pattern

2.1.2 Check and adjustment steps

The check and adjustment steps are provided in the following in the form of charts. For clarity, the nomenclature used in the charts is outlined below.

No.	Checks and adjustments are numbered in the recommended sequence in which they are to be performed.
Item	Name assigned to the particular check and adjustment step.
Check Point	Location to which measuring instrument (oscilloscope unless otherwise noted) is to be connected.
Adjustment Parts	Variable component (resistor, capacitor, etc.) to be adjusted in this step. Dash (—) indicates check only.
Signal & Mode	• Input signal required to perform adjustment. Dash (—) indicates that special signal is not required. • Equipment operating mode at time of check or adjustment.
Color bar	Color bar signal as video input.
Stairstep	Stairstep signal as video input.
1 kHz	Supply a 1 kHz sinewave as audio input signal.
MH-2 Color bar	Play color bar segment of MH-2 alignment tape.
MH-2 Stairstep	Play stairstep segment of MH-2 alignment tape.
MH-2 1 kHz	Play 1 kHz audio signal segment of MH-2 alignment tape.
MH-2 RF sweep	Play RF sweep segment of MH-2 alignment tape.
Stop	Power on and machine in Stop mode.
REC	Recording mode
PB	Playback mode
REC ↓ (another mode)	Use blank tape, record, then play back in the mode specified.
Search	Search (FWDS and REVS) playback mode.
Slow	Slow motion playback mode.
Still	Playback then Pause.
A DUB	Audio dubbing mode.
Description	This column provides an explanation of the step, notes, adjustment values, and reference to waveforms where applicable.

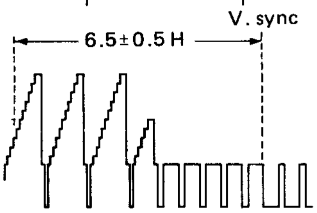
2.2 REGULATOR CIRCUIT

Note: Unless otherwise specified, all test points and adjustments are located on the REGULATOR board.

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	5 V DC Output Voltage	TP1	R17	• REC	1. Connect the digital voltmeter to TP1 and TP GND. 2. Adjust R17 for 5.33 ± 0.1 V at TP1.

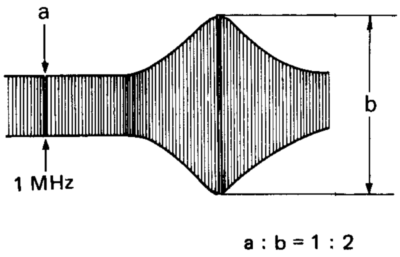
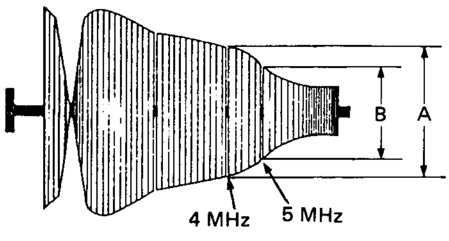
2.3 SERVO CIRCUIT

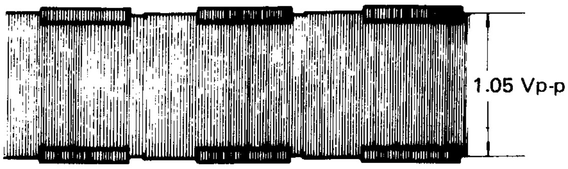
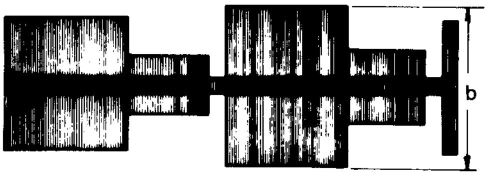
Note: Unless otherwise specified, all test points and adjustments are located on the SERVO board.

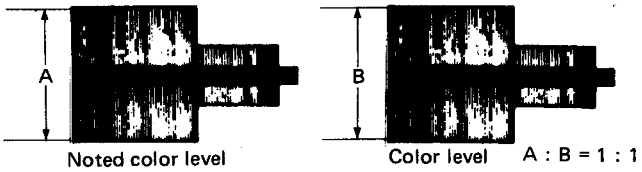
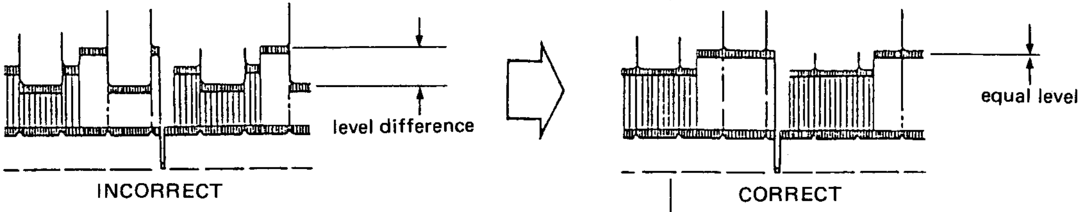
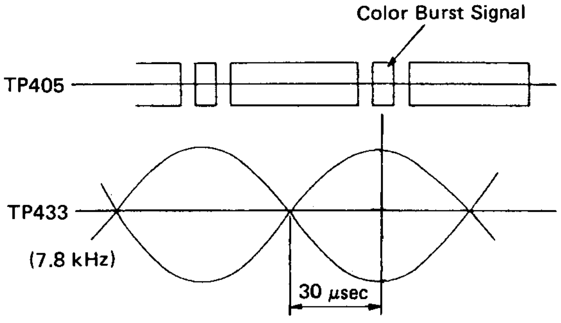
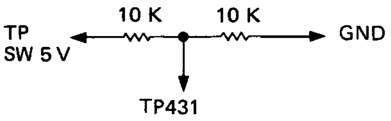
No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	PB Switching Point	VIDEO OUT or CN111-1	R24 (SP PB SW POINT)  Fig. 2-3-1	• PB • MH-2 Stairstep • Trigger slope (–) • SP mode	1. Connect an oscilloscope to VIDEO OUT (or CN111-1 of the MAIN board). 2. Play back the stairstep segment of MH-2 alignment tape. 3. Trigger the oscilloscope externally (– slope) with the signal from TP11 SERVO board (DRUM FF). 4. Adjust R24 to position the trigger point 6.5 ± 0.5H from V. sync.
2	Slow Tracking Preset	Monitor	R72	• Slow PB • SP mode	1. Set the slow tracking control of the Front panel to the center detent position. 2. Record a color bar signal in the SP mode, then play back in the slow mode. 3. Adjust R72 to minimize noise bars in the monitor-TV display and confirm that the noise bar is not visible in the picture.
			R69	• Slow PB • LP mode	4. Repeat the above steps (1 to 2) for the LP mode. 5. Adjust R69 to minimize noise bars in the monitor-TV display and confirm that the noise bar becomes in the lower 1/3 of the picture.
3	X2 Tracking Preset	Monitor	R18	• PB X2 • SP mode	1. Set the tracking control of the Front panel to the center detent position. 2. Record a color bar signal in the SP mode, then play back in the PB X2 mode. 3. Adjust R18 to minimize noise bar in the monitor-TV display and confirm that the noise bar is not visible in the picture.
			R20	• PB X2 • LP mode	4. Repeat the above steps (1 to 2) for the LP mode. 5. Adjust R20 to minimize noise bar in the monitor-TV display and confirm that the noise bar is not visible in the picture.

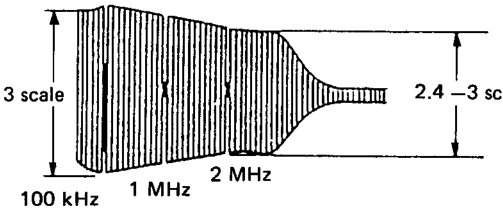
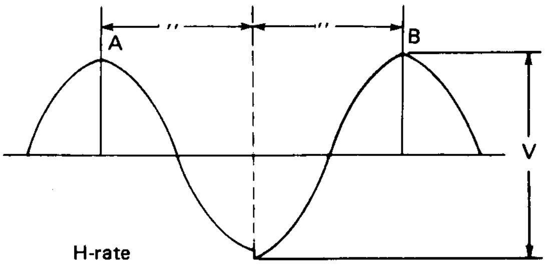
2.4 VIDEO CIRCUIT

Note: Unless otherwise specified, all test points and adjustments are located on the MAIN board.

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	Video Head Resonance & Q (Quality Factor)	TP5 PRE REC board  Fig. 2-4-1	C5, R1 CH2 PRE REC board	• RF sweeper • PB • SP mode	**Notes:** 1. This adjustment is required only after replacing the upper drum (video heads). 2. Connect ground of probe (oscilloscope) to shield case of the PRE REC board. 1. Set for the playback mode without a cassette tape. (Refer to mechanical adjustment 2.3.1.) 2. Connect an oscilloscope to TP5 of the PRE REC board. Supply a sweep generator output to TP1 of the PRE REC board, then adjust the sweep generator again so that the waveform does not distort at TP5. 3. Adjust C5 (Resonance) for 5 MHz peaking, and R1 (Quality Factor) so that the ratio between 1 MHz and 5 MHz level becomes 1 : 2 as shown in Fig. 2-4-1.
			C7, R2 CH1		4. Similarly, perform adjustment in the same manner as CH2. Change the sweep generator output from TP1 to TP2 of the PRE REC board. 5. Adjust resonance with C7 and Q with R2.
		TP5 PRE REC board	C13, R3 CH1	• RF sweeper • PB • LP mode	6. Repeat the above steps (1 to 3) for the LP mode. Connect the sweep generator output to TP3 of the PRE REC board. 7. Adjust resonance with C13 and Q with R3 for CH1.
			C15, R4 CH2		8. Similarly, perform adjustment in the same manner as CH1. Change the sweep generator output from TP3 to TP4 of the PRE REC board. 9. Adjust resonance with C15 and Q with R4.
		TP5 PRE REC board  Fig. 2-4-2	C5, R1 CH2 C7, R2 CH1 PRE REC board	• MH-2 (RF sweep) • SP mode • PB	● **Alternate method** 1. Play back RF sweep segment of MH-2 alignment tape. Connect the oscilloscope to TP5 of the PRE REC board and trigger the oscilloscope externally with the signal from TP11 of the servo board. 2. Use (−) trigger for CH1 and (+) trigger for CH2. Adjust tracking control of the Front panel to the center detent position. 3. Turn R1 fully clockwise and R2 fully counterclockwise so as not to damp as viewed from the component side of the PRE REC board. 4. Adjust C5 and C7 to set the CH2 and CH1 resonance point to 5.0 MHz. Use the control of the oscilloscope to position the 4 MHz region at graduation 3 (0 dB) of the oscilloscope scale. 5. Adjust R1 to position the 5 MHz portion at 2.4 (1 dB) of the oscilloscope graduations as shown in Fig. 2-4-2. 6. In the same manner, adjust R2 for CH2. 7. If the CH1 and CH2 levels differ, adjust the higher level channel to match the lower with R1 and R2.

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
		TP5 PRE REC board	C13, R3 CH1 C15, R4 CH2 PRE REC board	• MH-2 (RF sweep) • LP mode • PB	8. Short TP4 of the servo board to ground for LP mode. Similarly, perform adjustment in the same as SP mode. 9. Adjust resonance with C13 and Q with R3 for CH1. 10. Adjust resonance with C15 and Q with R4 for CH2. 11. If the CH1 and CH2 levels differ, adjust the higher level channel to match the lower with R3 and R4.
2	REC FM Level	TP3 PRE REC board  Fig. 2-4-3	R119	• Color bar • REC • LP mode	1. Connect an oscilloscope to TP3 of the PRE REC board. Supply a color bar signal to VIDEO IN and set for the REC mode. 2. Adjust R119 for 1.05 Vp-p between centers of the waveform portions indicated in Fig. 2-4-3.
3	VXO	TP306	R328	• PB • MH-2 Color bar • SP mode	1. Connect a frequency counter to TP306. 2. Play back the color bar segment of MH-2 alignment tape. 3. Adjust R328 for 4.433619 MHz ± 50 Hz.
4	REC Color Level	TP304  Fig. 2-4-4	R322	• PB • MH-2 (Color bar) • SP mode • REC then PB • Color bar • SP mode	1. Connect an oscilloscope to TP304. Play back a color bar segment of the MH-2 and observe color signal level. 2. Adjust the Tracking control of the Front panel for maximum level of the color waveform and make a note of the higher color level. 3. Set the Tracking control to the center detent position. 4. Record and play back a color bar signal. If necessary, before recording, adjust R322 so that the higher level channel becomes 75 to 85 % of the noted level during playback. At this time, confirm that the channel difference is within 3 dB.
		TP304	R438	• PB mode • MH-2 (Color bar) • LP mode • REC then PB • Color bar • LP mode	**Note:** Perform the LP mode adjustment after completing the SP mode. 5. Short TP4 of the servo board to ground and repeat the above steps (1 to 3) for the LP mode. 6. Record and play back a color bar signal. If necessary, before recording, adjust R438 so that the higher level channel becomes 75 to 85 % of the noted level during playback. At this time, confirm that the channel difference is within 3 dB.

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
5	1 H Delayed Color Level  A B Noted color level Color level A : B = 1 : 1 Fig. 2-4-5	TP405	R401	• PB mode • MH-2 (Color bar) • SP mode	1. Connect an oscilloscope to TP405. Play back the color bar segment of MH-2 alignment tape and make a note of the color level. 2. Short TP434, TP435 to ground. Adjust R401 so that the color level becomes equal of the noted color level.
6	0.5 H Delayed Color Level  level difference INCORRECT equal level CORRECT Fig. 2-4-6	VIDEO OUT or CN111-1	R223	• REC then PB • Color bar • LP mode	1. Connect an oscilloscope to VIDEO OUT or CN111-1 and set the time base of the oscilloscope to 2 ms/div. Trigger the oscilloscope externally (— slope) with the signal from TP11 (DRUM FF). 2. During Search, adjust R223 so that the Y level difference is uniform at VIDEO OUT as shown in Fig. 2-4-6.
7	APC Error Phase  Color Burst Signal TP405 TP433 (7.8 kHz) 30 μsec Fig. 2-4-7	TP405	L401	• PB mode • MH-2 Color bar • SP mode	1. Connect a jump wire between TP436 and GND. 2. Connect one channel of a dual trace oscilloscope to TP405 and the other channel toTP433 and observe the waveforms. 3. Adjust L401 to position the zero-cross 30 μsec ± 3 μsec from the center of the burst signal as shown in Fig. 2-4-7.
8	0.5 H Delayed Jump Det.  10 K 10 K TP SW 5 V GND TP431 Jig circuit Fig. 2-4-8	TP432	R418	• EE mode • No signal	1. Use Jig circuit as shown in Fig. 2-4-8 and connect the Jig circuit to TP SW5, GND and TP431 (Vcc/2 V). 2. Connect a frequency counter to TP432. Adjust R418 for 30 ± 0.2 kHz at TP432.

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
9	SP PB Frequency & CH Balance	VIDEO OUT or CN111-1	R110	• REC then PB • Video sweep • SP mode  Fig. 2-4-9	1. Terminate VIDEO OUT at 75 Ω and set the sharpness control of the Front panel to the center detent position. Connect a video sweep generator to VIDEO IN. 2. Record and play back a video sweep signal in the SP mode. Use the control of the oscilloscope to position the 100 kHz region at graduation 3 (0 dB) of the oscilloscope scale. 3. Adjust R110 to position the 2 MHz of CH1 portion at 2.4 ~ 3.0 (–1 ± 1 dB) of the oscilloscope graduations as shown in Fig. 2-4-9. 4. Confirm that the channel difference is within 2 dB.
				• REC then PB • TV broadcast • SP mode	• **Alternate method** 1. Set the sharpness control of the Front panel to the center detent position. 2. Record and play back a color broadcast that shows a good depiction of human facial contours in the SP mode. Adjust R110 to obtain distinct facial features on the monitor. **Note:** R110 nearly at the center position.
10	LP PB Frequency & CH Balance	VIDEO OUT or CN111-1	R202 PRE REC board	• REC then PB • Video sweep • LP mode	1. Repeat the above steps for LP mode. Adjust R202 for –5 ± 1 dB (1.5 ~ 1.7 scale).
				• REC then PB • TV droadcast • LP mode	• **Alternate method** 1. Repeat the above steps for LP mode. Adjust R202 for distinct facial features on the monitor. **Note:** R202 nearly at the center position.
11	SECAM DET.	TP310	L351 R355	• SECAM • Color bar • E-E • SP mode • REC then PB  Set this point to center position between points "A" and "B". V = more than 4 Vp-p in REC V = 6.0 ± 0.5 Vp-p in PB Fig. 2-4-10	1. Connect an oscilloscope to TP310. Record and play back a SECAM color bar and adjust R355 (SECAM DET) to obtain 6 ± 0.5 Vp-p. 2. Adjust L351 (1/2 Fh TUNING) so that the transition step becomes at the center of "A" and "B" as shown in Fig. 2-4-10.

2.5 AUDIO CIRCUIT

Note: Unless otherwise noted, all test points and adjustments are located on the AUDIO board.

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	Bias Level	TP31 TP32	R20	• REC • SP mode • TV PR button: AUX • AUDIO OUT: NORM	1. Connect a millivoltmeter between TP32 and TP32. Set for REC mode without signal (VIDEO and AUDIO). Adjust R20 for 3.0 ± 0.2 mVrms.
2	PB Level	AUDIO OUT	R5	• SP or LP mode • REC then PB 1 kHz, –8 dBs • TV PR button: AUX • AUDIO OUT: NORM	1. Supply an audio signal (–8 dBs/1 kHz at A/V connector to both channels of AUDIO IN and record and play back an audio signal together with a video signal. 2. Adjust R5 so that the audio output level during playback becomes –6 ± 2 dBs.

2.6 FMA CIRCUIT

Note: 1. Unless otherwise specified, all test points and adjustments are located on the FMA board.
2. Set the AUDIO LIMITER SW to ON position to obtain –6 dBs ± 0.5 dBs at AUDIO OUT.

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	E-E Level 1	AUDIO OUT	R5 (CH1/L)	• TV PR button: AUX • Limiter SW to ON • AUDIO OUT to Hi-Fi • E-E	1. Set the TV PROGRAM button switch to the AUX position. Supply a 1 kHz, –8 dBs audio signal via A/V CONN. (both channels). 2. Set the AUDIO LIMITER SW to ON position. In the STOP (E-E) mode, adjust R5 to obtain –6 ± 0.5 dBs at AUDIO OUT.
			R6 (CH2/R)		3. In the same manner, adjust R6 for the R (CH2) channel.
2	E-E Level 2	AUDIO OUT	R33 (CH1/L)	• TV PR button: AUX • Limiter SW to OFF • E-E (STOP) • AUDIO OUT monitor to Hi-Fi	1. Set the TV PROGRAM button switch to the AUX position. Supply a 1 kHz, –8 dBs audio signal via A/V CONN. (both channels). 2. Set the AUDIO LIMITER switch to OFF. Set the Hi-Fi recording level control to the center position. In the STOP (E-E) mode, adjust R33 to obtain –6 ± 0.5 dBs at AUDIO OUT.
			R34 (CH2/R)		3. In the same manner, adjust R34 for the R (CH2) channel.
3	REC FM Level	TP201	R218	• TV PR button: AUX • Without Audio signal • SP REC mode • AUDIO OUT: Hi-Fi	**Note:** Perform the FMA REC FM Level adjustment after completing the VIDEO REC FM Level adjustment (Section 2.4, No. 2). 1. Without supplying input signal, set the TV PROGRAM button switch to the AUX position. 2. In the SP REC mode, adjust R218 for 400 ± 20 mVp-p FM waveform envelope at TP201.

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
4	PB Level	AUDIO OUT	R259 (CH1/L)	• PB • MH-F2 • 1 kHz ± 50 kHz deviation • AUDIO OUT to Hi-Fi	1. Play back the 1 kHz ± 50 kHz deviation segment of the MH-F2 alignment tape. 2. Adjust R259 to obtain –9 ± 0.5 dBs during playback at AUDIO OUT.
			R250 (CH2/R)		3. In the same manner, adjust R250 for the R (CH2) channel.
5	Level Indicator	FDP (Level Ind.)	R29 (Indicator CH1/L)	• AUX • AUDIO OUT to Hi-Fi • Limiter SW to OFF	**Note:** Perform the level indicator adjustment after completing the E-E level adjustment (section 2.6, No. 1, 2). 1. Set the TV PROGRAM button switch to the AUX position. Supply a 1 kHz, –8 dBs audio signal via A/V CONN. (both channels). 2. Set Hi-Fi REC controls to obtain –6 ± 0.5 dBs at AUDIO OUT. In the E-E (STOP) mode, adjust R29 to where the FDP level indicators show 0 dB (all white LEDs light).
			R30 (Indicator CH2/R)		3. In the same manner, adjust R30 for the R(CH2) channel.

2.7 TIMER CIRCUIT

Note: Unless otherwise specified, all test points and adjustments are located on the TIMER board.

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	Timer Clock	TP2	C101	• E-E	1. Connect the frequency counter to TP2 (OSC OUT) and TP3 (GND). 2. Short GND and TP1 (TEST). Then short the leads of electrolytic capacitor C7 once in order to reset IC101. 3. Adjust C101 for 488.2813 ± 0.005 μsec (or, 2048.000 Hz ± 0.002 Hz). **Note:** Resetting IC1 while TP1 and GND are shorted provides the TEST mode.

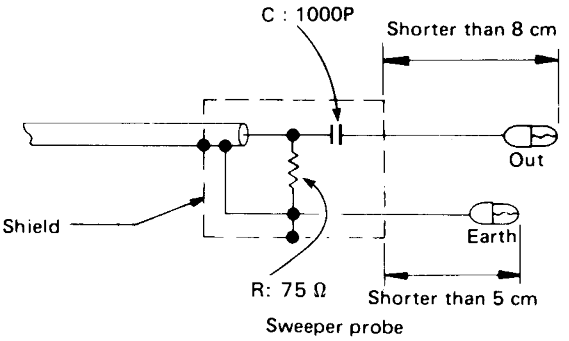
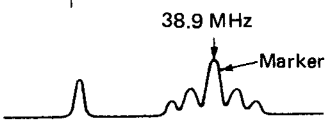
2.8 DIGITAL COLOR PROCESS CIRCUIT

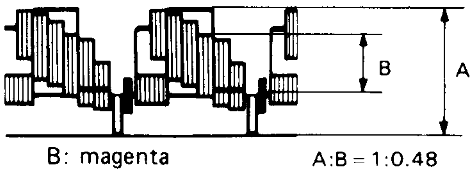
Note: Unless otherwise specified, all test points and adjustments are located on the DIGITAL COLOR PROCESS board.

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	Digital Color Level	TP1 (Digital Color process board)	R14	• E-E • TV channel button (0) : AUX	1. Set the TV channel button switch (0) to the AUX position. Supply a color bar signal to VIDEO IN via A/V CONN. and set for the DIGITAL MEMORY mode by remote controller. 2. Connect an oscilloscope to TP1 and TP GND of the digital color process board. Adjust R14 for the same and stable color level between frames.

2.8 TUNER/IF CIRCUIT

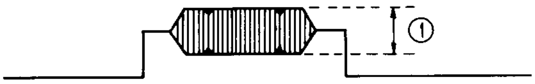
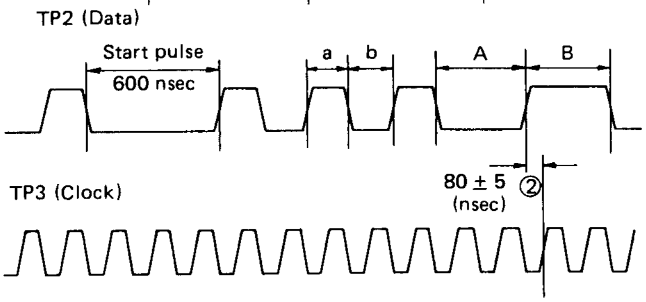
Note: Unless otherwise specified, all test points and adjustments are located on the TUNER/IF board.

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
Equipment required: 1. Oscilloscope 2. IF sweep signal genrator with suitable markers (PIF, SIF, etc.) 3. Sweeper probe (sweep signal supply cable) as shown below.					 C : 1000P Shorter than 8 cm Out Shield Earth R: 75 Ω Shorter than 5 cm Sweeper probe **Fig. 2-8-1**
1	VCO  VCO and sweep signal (beat) **Fig. 2-8-2**	IC1 - 28	T2 (VCO)	• Sweep genrator out: 70 dBμ (38.9 MHz) • Tuner mode without antenna IN	1. Use a sweeper probe as shown in Fig. 2-8-1 and connect the sweep generator output to pin 1 of SAW 1. Adjust the sweep gain so that the waveform does not distort as observed with the oscilloscope. Connect the oscilloscope to pin 28 of IC1 (VIDEO DET OUT) and adjust T2 to align the waveform with the frequency marker as shown in Fig. 2-8-2.
2	IF Adj.	IC1 - 28	IF Core in Front end	• Sweep generator out: 70 dBμ (38.15 MHz) • Tuner mode without antenna IN	1. Use a sweeper probe as shown in Fig. 2-8-1 and connect the sweep generator output to TP of the Front end (TUNER). 2. Connect the oscilloscope to pin 28 of IC1. Adjust IF core of the Front end so that the 38.15 MHz marker becomes maximum level.
3	FTZ Trap	IC1 - 28	T1	• Sweep generator out: 70 dBμ (32.4 MHz) • Tuner mode without antenna IN	1. Use a sweeper probe as shown in Fig. 2-8-1. 32.4 MHz signal that is modulated (Amplitude Modulation) at 400 Hz is supplied to Front TP of U/V Tuner (Front end). 2. Connect the oscilloscope to pin 28 of IC1. Adjust T1 for minimum level.
• **Before the following adjustments:** 1. Connect a cable to ANT IN and terminate TV OUT at 75 Ω. 2. Set a TV channel signal generator as follows. Video : 65 dBμ/75 Ω, color bar 87.5% modulation Audio : 55 dBμ/75 Ω, 1 kHz ± 50 kHz deviation					
4	RF AGC	IF terminal of Front end	R11	• TV signal • Tuner mode	1. Connect the oscilloscope to IF terminal of U/V Tuner (Front end). Adjust R11 for maximum level, then again adjust R11 for –5 dB again.
5	VPS Y Level	CN3 - 1 (E) CN4 - 1 (EG)	R16	• TV signal • TV mode	1. Connect the oscilloscope to pin 1 of CN3. Adjust R16 to obtain a Y level (including SYNC) of 2.0 Vp-p at CN3 - 1 (or CN4 - 1).

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
6	Color Level  **Fig. 2-8-3**	CN2 - 3 (VIDEO OUT)	R42	TV signal Tuner mode Color bar	1. Receiving a color bar signal. Set the Y level for 100% reference signal and then adjust R42 for a magenta level of 48% at pin 3 of CN2.

2.9 VPS CIRCUIT (EG only)

Note: Unless otherwise specified, all test points and adjustments are located on the VPS board.

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	Oscillator or adjustment  **Fig. 2-9-1**	TP6	T1	Tuner mode	1. Observe the TP6 waveform on the oscilloscope. 2. Adjust the inner core of coil T1 so that maximum (peak) appears as shown by ① in the figure.
2	Duty check (TP2 and TP3 waveforms)  TP2 (Data) Start pulse 600 nsec a b A B 80 ± 5 (nsec) ② TP3 (Clock) **Fig. 2-9-2**	TP2 TP3	–	Tuner mode	1. Connect the oscilloscope to TP2 and TP3. 2. Refer to the figure and check that a : b = 200 ± 10 (nsec) : 200 ± 10 (nsec) A : B = 400 ± 20 (nsec) : 400 ± 20 (nsec) The start pulse is positioned ahead of the data and is 600 nsec only at this point.
3	Timing adjust	TP2	T1	Tuner mode	1. On the same situation as above. 2. Adjust T1 so that time between data rise and clock rise (② in figure 2-9-2) is 80 ± 5 nsec.

2.10 DEMODULATOR CIRCUIT

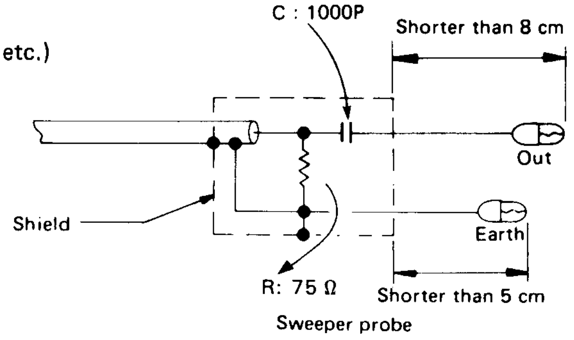
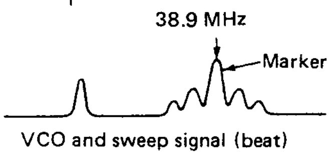
Note: Unless otherwise specified, all test points and adjustments are located on the DEMODULATOR board.

Audio Multiplex TV Signal Generator

Recommended Specifications

1. Signal Format	Based on CCIR-B
2. Frequency	
Video Carrier Fv	38.9 MHz
1st Sound Carrier fs_1	33.4 MHz
2nd Sound Carrier fs_2	33.1578125 MHz
3. Modulator	
Video	Crosshatch (black on white) V: 50 Hz, H: 15.625 kHz
Audio	Sinewave 1 kHz; CH1 and CH-2 outputs switchable
4. Output	97 dB/μV (open) ± 2 dB fixed, BNC-R 75 Ω
5. P-S Ratio	S_1 P – 13 dB ± 2 fixed S_2 P – 20 dB ± 2 fixed
6. Modulation	
Video	87.5% ± 3%
Audio	±30 kHz ± 2 kHz
7. Stereo Separation	Less than –40 dB
8. Pilot Signal	
Carrier Frequency	54.6875 kHz ± 5 Hz synchronized type
Stereo	117.5 Hz AM 50%
Dual	274.1 Hz AM 50%

9. Sound Modulation Modes	S_1	S_2
Mono	Mono 1	Mono 2
Stereo	(L + R)/2	R
Dual	Mono 1	Mono 2
10. Functions	S_1	S_2
Mono (M)	100%	100%
Stereo (L, R)	(L + R)/2	R
(L)	L/2	–
(R)	R/2	R
(OFF)	–	–
Mult (S_1, S_2)	100%	100%
(S_1)	100%	0
(S_2)	0	100%
(OFF)	0	0
V. MOD (ON/OFF)		
11. Frequency Accuracy	Within ±5 x 10^{-5}	
12. Spurious	Less than –50 dB	
13. Saw Filter	Self-contained	

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
Equipment required: 1. Oscilloscope 2. IF sweep signal generator with suitable markers (PIF, SIF, etc.) 3. Sweeper probe (sweep signal supply) as shown below.					 C : 1000P Shorter than 8 cm Out Shield Earth R: 75 Ω Shorter than 5 cm Sweeper probe **Fig. 2-10-1**
1	VCO	IC1 - 28	T4	• Sweep generator out: 70 dBμ (38.9 MHz) • Tuner mode	1. Use sweeper probe as shown in Fig. 2-10-1 and connect the sweep generator output to pin 1 of SAW 1. 2. Adjust the sweep gain so that the waveform does not distort as observed with the oscilloscope. 3. Connect the oscilloscope to pin 28 of IC1 (VIDEO DET OUT) and adjust T4 to align the waveform with the 38.9 MHz marker as shown in Fig. 2-10-2.
		 VCO and sweep signal (beat) **Fig. 2-10-2**			

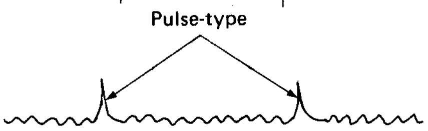
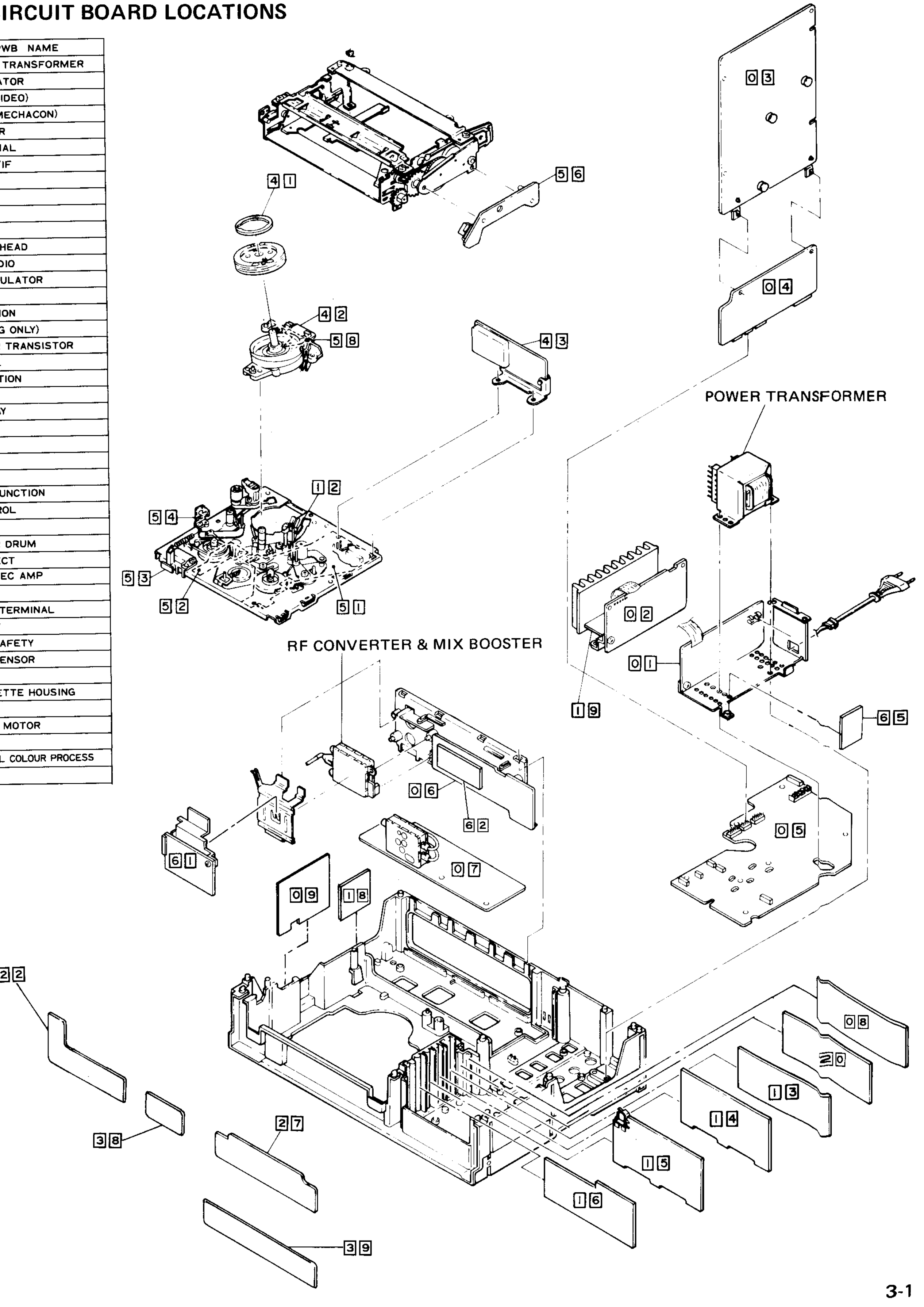
<table>
<tr><th>No.</th><th>Item</th><th>Check Point</th><th>Adjustment Parts</th><th>Signal & Mode</th><th>Description</th></tr>
<tr><td colspan="5">**● Before the following adjustments:**
1. Connect a cable to ANT IN and terminate TV OUT at 75 Ω.
2. Set a TV channel signal generator as follows.
Video : 70 dBμ/75 Ω, color bar 87.5% modulation
Audio : S1 (L); 57 dBμ/75 Ω, S2 (R); 50 dBμ/75 Ω, 1 kHz ± 30 kHz deviation</td><td></td></tr>
<tr><td>2</td><td>Sound Det.</td><td>IC2 - 3</td><td>T3 (SOUND 1 DET)</td><td>• Tuner mode</td><td>1. Set the signal generator mode to dual (L) 1 kHz 100% and (R) unmodulated, connect a distortion meter to IC2 pin 3. Adjust T3 for minimum distortion.</td></tr>
<tr><td></td><td></td><td>IC2 - 2</td><td>T5 (SOUND 2 DET)</td><td>• Tuner mode</td><td>2. Set the signal generator mode to dual (R) 1 kHz 100% and (L) unmodulated, connect a distortion meter to IC2 pin 2. Adjust T5 for minimum distortion.</td></tr>
<tr><td>3</td><td>Stereo Separation</td><td>IC2 - 5</td><td>R31</td><td>• Tuner mode</td><td>1. Set the signal generator mode to stereo (R) 1 kHz 100%, connect an oscilloscope to IC2 pin 5. Adjust R31 for minimum level.</td></tr>
<tr><td>4</td><td>Buzz Adj.</td><td>CN2 - 4</td><td>T4</td><td>• Tuner mode</td><td>**Note:** Perform items 1 (VCO) and 4 (BUZZ) mutually.
1. Set the signal generator mode to (L), (R) unmodulated, connect the oscilloscope to CN2 pin 4. Carefully adjust T4 to minimize pulse-type noise as shown in Fig. 2-10-3.</td></tr>
<tr><td></td><td></td><td colspan="3">

Fig. 2-10-3</td><td></td></tr>
<tr><td>5</td><td>Stereo Output Level</td><td>CN2 - 4 (L)</td><td>R57 (L)</td><td>• Tuner mode</td><td>1. Set the signal generator mode to stereo (L) 1 kHz 100% and (R) unmodulated, connect a level meter to CN2 - 4.
Adjust R57 for −17 ± 0.5 dBs.</td></tr>
<tr><td></td><td></td><td>CN2 - 2 (R)</td><td>R62 (R)</td><td>• Tuner mode</td><td>2. Similarly, with the L channel unmodulated, provide 1 kHz 100% modulation on the R channel. Adjust R62 for −17 ± 0.5 dBs.</td></tr>
</table>

SECTION 3
CHARTS AND DIAGRAMS

3.1 CIRCUIT BOARD LOCATIONS

No.	PWB NAME
01	POWER TRANSFORMER
02	REGULATOR
03	MAIN (VIDEO)
04	MAIN (MECHACON)
05	MOTHER
06	TERMINAL
07	TUNER/IF
08	SERVO
09	AUDIO
12	A/CTL HEAD
13	FM AUDIO
14	DEMODULATOR
15	TIMER
16	JUNCTION
18	VPS (EG ONLY)
19	POWER TRANSISTOR
20	DIGITAL
22	OPERATION
27	DISPLAY
38	SUB JUNCTION
39	CONTROL
41	UPPER DRUM
42	CONNECT
43	PRE/REC AMP
51	DECK TERMINAL
52	RELAY
53	REC SAFETY
54	END SENSOR
56	CASSETTE HOUSING
58	DRUM MOTOR
61	APC
62	DIGITAL COLOUR PROCESS
65	FUSE


03
41
56
04
42
58
43
POWER TRANSFORMER
12
54
53
52
51
02
RF CONVERTER & MIX BOOSTER
01
19
65
06
62
05
61
07
09
18
22
08
20
13
14
15
16
27
38
39

3.2 GENERAL INFORMATIONS

3.2.1 Connections

Note:
Unless otherwise specified, only signal input flow is indicated.
Connection arrows indicate only signal outputs.

1
2
3
: Connector

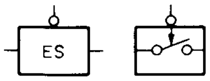
①
②
③
: Direct connection

1
2
3
: Board in connector

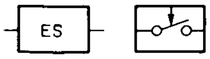
VS
MS
SM
: Connected pattern in the board.
Abbreviations
V : Video M : Mechacon
S : Servo A : Audio
VS : Signal flow from video to servo.

3.2.2 Indications

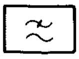
AUX : Active only at high.
$\overline{AUX}$: Active only at low.
$\bar{A}\bar{U}\bar{X}$: Active only at middle.
$\bar{A}U\bar{X}$: Active only at open.

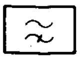


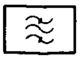
: Active only at low for electronic switch.

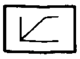


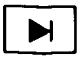
: Active only at high for electronic switch.

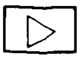

: Low pass filter.

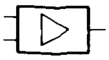

: High pass filter.


: Band pass filter.

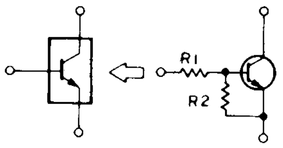

: Limiter.

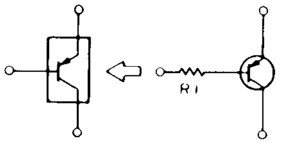

: Detector


: Amplifier.


: Mixer stage.

3.2.3 Digital transistor





DTA114T
T mark only

Note:
The digital transistor includes built in resistors.
It features small size and high reliability.
Both PNP and NPN types are available.

Uses:
Inverter, Interface, driver circuits.

3.2.4 Signal flow in the schematic

➡ Recording signal path
⇨ Playback signal path
➡ REC/PB signal path

3.2.5 Schematic diagram values

Unless otherwise specified.

1. All resistance values are in ohms, 1/6 W, 1/8 W, (refer to parts list).
2. All capacitance values are in μF, (P; PF).
3. All inductance values are in μH, (m; mH).
4. All diodes are 1SS133 or MA165, (refer to parts list).
5. Voltages are DC-measured (reference to ground) with a digital voltmeter during recording (SP mode) and playback (SP mode) with alignment tape. Where voltages differ between recording and playback, the voltage during playback is shown in parentheses.
6. Waveforms (VIDEO System) are measured (reference to ground) with a color bar during recording (SP mode) and playback (SP mode) with alignment tape.
7. Waveforms (AUDIO System) are measured (reference to ground) with 1 kHz (–3.8 dBs at A/V connector) during recording and playback with alignment tape (1 kHz).
8. Shaded (▨) parts are critical for safety.
   Replace only with specified parts numbers.

3.3 ABBREVIATIONS USED IN THE SCHEMATIC DIAGRAM

A
AC : Alternating Current
ACC : Automatic Color Control
ACCEL : Acceleration
A/CTL : Audio/Control
ADC : Analog to Digital Converter
ADD : Adder
ADRS : Address
ADJ : Adjustment
A DUB : Audio Dubbing
AE : Audio Erase
AEF : Automatic Editing Function
AFC : Automatic Frequency Control
AFT : Automatic Fine Tuning
AGC : Automatic Gain Control
AH : Audio Head
AL : After Loading
ALC : Automatic Light Compensation
Automatic Level Control
AM : Amplitude Modulation
AMP : Amplifier
ANT : Antenna
APC : Automatic Pedestal Control
Automatic Phase Control
APL : Average Picture Level
A/S/M : Audio/Servo/Mechacon
ASS'Y : Assembly
ATT : Attenuator
AUD : Audio
AUTO : Automatic
AUX : Auxiliary

B
B : Base
BAL : Balance
BATT : Battery
BFP : Burst Flag Pulse
BIT : Binary Digit
BLK : Black, Blanking
BLU : Blue
BILING : Bilingual
BPF : Bandpass Filter
BRK : Brake
BRN : Brown
BT : Band Tuning
BUFF : Buffer
BW or B/W : Black and White

C
C : Capacitance, Collector, Color
CAP : Capstan, Capacitor
CAR : Carrier
CARR : Carrier
CASS : Cassette
CCD : Charge Coupled Device
CCT : Circuit
CD : Count Down
CE : Chip Enable
CF : Ceramic Filter
CH : Channel
CHG : Charge
CHROMA : Chrominance
CLK : Clock
CLR : Clear
CMD : Command
CNT : Count, Counter
COL : Color
COM : Common
COMB : Combination
Comb Filter
COMP : Comparator
Composite
Compensation
CONN : Connector
CONV : Converter
CP : Circuit Protector
Clamp Pulse
CPC : Capstan Phase Control
CTL : Control

D
D : Drum, Digital, Diode, Drain
DAC : Digital to Analog Converter
dB : Decibel
DC : Direct Current
DEC : Decoder
DEMOD : Demodulator
DEMUX : Demultiplexer
DET : Detector
DEV : Deviation
DIF : Differential
DISCR : Discriminator
DL : Delay Line
DOC : Dropout Compensator
DOD : Drop Out Detector
DPC : Drum Phase Control

E
E : Edit, Emitter
E-E : Electric to Electric
EF : Emitter-Follower
EMP : Emphasis
EN : Enable
ENC : Encoder
ENV : Envelope
EP : Extended Play
EQ : Equalizer
ES : Electronic Switch
ESNS : End Sensor
EXP : Expander
EXT : External

F
F : Farad, Fuse
F ADV : Frame Advance
FDP : Fluorescent Display Panel
FE : Full Erase
FET : Field Effect Transistor
FF : Fast Forward
Flipflop
FG : Frequency Generator
FM : Frequency Modulation
FMA : FM Audio
FR : Full Recording, Frame, Fusible Resistor
FREQ : Frequency
F-V CONV : Frequency to Voltage Converter
FWD : Forward
FWD S : Forward Search

G
G : Green, Gate, Grid
GEN : Generator
GND : Ground
GRN : Green
GRY : Gray

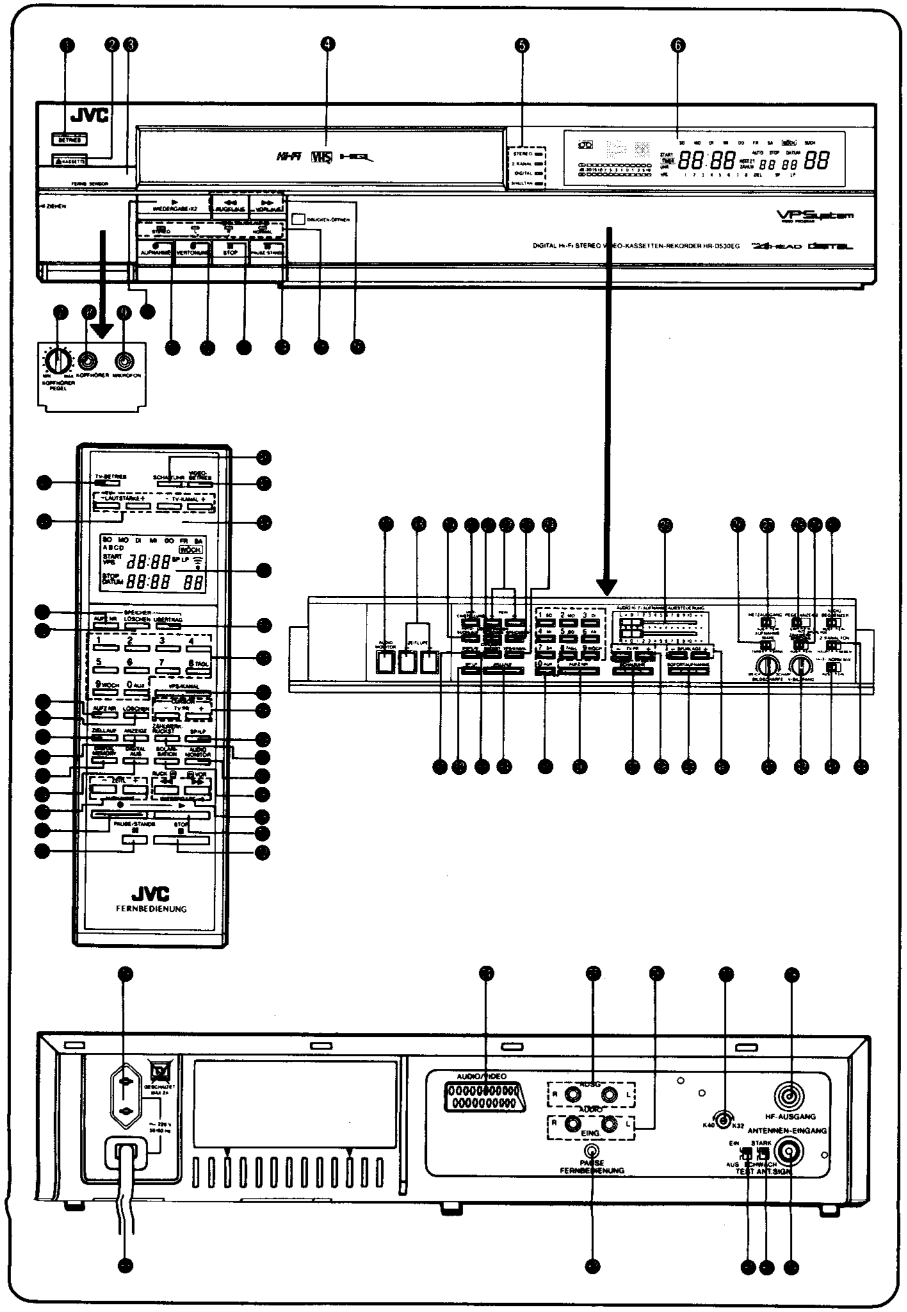
H
H : High, Henry, Hour
HG : Hall Generator
HPF : Highpass Filter
Hz : Herz

I
IC : Integrated Circuit
ID : Identification (Pulse)
IF : Intermediate Frequency
IFR : Infrared
IFT : Intermediate Frequency Transformer
IND : Indicator
INH : Inhibit
INS : Insert
INT : Internal, Interrupt
INV : Inverter
I/O : Input/Output
IR : Infrared

L
L : Low, Left
LIM : Limiter
LIN : Linearity
LOAD : Loading (Cassette)
LP : Long Play
LPF : Lowpass Filter

M	M	: Motor, Mega
	MAX	: Maximum
	MDA	: Motor Drive Amplifier
	MECHACON	: Mechanism Control
	MIC	: Microphone
	MIN	: Minimum
	MIX	: Mixer, Mixing
	MMV	: Monostable Multivibrator
	MOD	: Modulation, Modulator
	MODEM	: Modulator-Demodulator
	MON	: Monitor
	MPX	: Multiplexer, Multiplex
	MS	: Mode Select
N	NAND	: Not-And
	NC	: Not Connected, Normally Closed
	NFB	: Negative Feedback
	NLN	: Non-Linear
	NO	: Normally Open
	NOR	: Normal, Not-Or
	NR	: Noise Reduction
O	OP	: Operation
	OPAMP	: Operational Amplifier
	ORN	: Orange
	OSC	: Oscillator
P	PB	: Playback
	PC	: Photocoupler, Pulse Counter
	PCM	: Pulse Code Modulation
	PG	: Pulse Generator
	PGM	: Program
	PI	: Photo Interrupter
	PIF	: Picture Intermediate Frequency
	PLA	: Programmable Logic Array
	PLL	: Phase Locked Loop
	POS	: Position
	p-p	: Peak-to-Peak
	PREAMP	: Preamplifier
	P/S	: Pause/Still
	PSC	: Pulse Swallowing Control
	PU	: Pickup
	PUT	: Programmable Unijunction Transistor
	PWM	: Pulse Width Modulation
	PWR	: Power
Q	Q	: Quality Factor
R	R	: Red, Right
	RA	: Resistor Array
	RAE	: Random Access Enable
	RAM	: Random Access Memory
	REC	: Recording
	REF	: Reference
	REG	: Regulated, Regulator
	REM	: Remote
	REMOCON	: Remote Control (Unit)
	REV	: Reverse
	REV S	: Reverse Search
	REW	: Rewind
	R/P	: Record/Playback
	RPT	: Repeat
	RST	: Reset
	RT	: Rotary Transformer
	RUN	: Running
	RY	: Relay
S	SAW	: Sawtooth, Surface Acoustic Wave
	SC	: Subcarrier, Simulcast
	SCH	: Search
	SEL	: Select, Selector
	SENS	: Sensor
	SEP	: Separator
	SF	: Source Follower
	SFF	: Short Fast Forward
	SIF	: Sound Intermediate Frequency
	SHARP	: Sharpness
	SN	: Signal to Noise Ratio
	SOL	: Solenoid
	SP	: Standard Play
	SREV	: Search Reverse
	SREW	: Short Rewind
	S/S	: Slow/Still
	SSG	: Sync Signal Generator
	SSNS	: Start Sensor
	STD	: Strobe Data, Standard
	SUP	: Supply
	SW	: Switch
	SWD	: Switched
	SYNC	: Synchronization
T	TF	: Thermal Fuse
	TIM	: Timing
	TK	: Tracking
	TNR	: Tuner
	TP	: Test Point
	TPZD	: Trapezoid
	TR	: Transistor, Trimmer
	TRANS	: Transformer
	TU	: Take-up
U	UL	: Unloading
	UNCOR	: Uncorrelated
	UNREG	: Unregulated
	UNSW	: Unswitched
V	V	: Vertical, Volt
	VCO	: Voltage Controlled Oscillator
	VD	: Vertical Drive
	VIF	: Video Intermediate Frequency
	VLT	: Violet
	VR	: Variable Resistor
	VS	: Video and Sync
	V/T	: Video/Television
	V/U	: VHF/UHF
	VXO	: Variable Crystal Oscillator
W	W	: Watt
	W & D	: White and Dark
	WHT	: White
X	XTAL	: Crystal
Y	Y	: Luminance
	YEL	: Yellow

INSTRUCTIONS



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SAFETY PRECAUTIONS

The rating plate and the safety caution are on the rear of the unit.

WARNING – DANGEROUS VOLTAGE INSIDE
WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

IMPORTANT (In the United Kingdom)
Mains Supply (240 V∿, 50 Hz only)

IMPORTANT

Do not make any connection to the Larger Terminal coded E or Green. The wires in the mains lead are coloured in accordance with following code:

Blue to N (Neutral) or Black
Brown to L (Live) or Red

If these colours do not correspond with the terminal identifications of your plug, connect as follows:
Blue wire to terminal coded N (Neutral) or coloured Black.
Brown wire to terminal coded L (Live) or coloured Red.
If in doubt – consult a competent electrician.

Note
We recommend that you should disconnect the AC cord from the outlet.

CAUTION

- Disconnect the mains plug from the supply socket when not in use.
- When you are not using the HR-D530EG for a long period of time, it is recommended that you disconnect the power cord from the AC outlet.
- Dangerous voltage inside. Refer internal servicing to qualified service personnel. To prevent electric shock or fire hazard, remove the power cord from the AC outlet prior to connecting or disconnecting any signal lead or aerial.

VHS PAL HQ

- Only cassettes marked "VHS" can be used with this video cassette recorder.
- HQ VHS is compatible with existing VHS equipment.

FOR YOUR SAFETY (in Australia)
Install any external aerial to AS 1417.1

Omkopplaren BETRIEB på denna apparat är sekundärt kopplad och skiljer inte apparaten från nätet i läge BETRIEB OFF.

The BETRIEB button does not completely shut off mains power from the unit, but switches operating current on and off.

BEMAERK: I stilling OFF er apparatet stadig forbundet med lysnettet Hvis det ønskes fuldstændig afbrudt skal netledningen trækkes ud.

This unit is produced to comply with Directive 82/499/EEC.

Video tapes recorded with this video recorder in the LP (Long Play) mode cannot be played back on a single-speed video recorder.

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FEATURES

Digital features
- **Digital Freeze** to freeze the action during playback or while watching a regular TV broadcast, with the soundtrack unaffected.
- **Digital Strobe** for a "time-lapse" effect during playback or while watching a regular TV broadcast, with the soundtrack unaffected.
- **Digital Solarization** for a variety of fascinating colour changes during playback or while watching television, with the soundtrack unaffected.
- **Digital Still and Slow-motion** at 1/6, 1/12, 1/18, 1/24 or 1/30 normal speed during playback.
- **Digital double-speed playback.**

High-quality pictures
- **HQ (High-Quality) System technologies** with a Detail Enhancer and 20 % higher white clip level.
- **Double-Azimuth 4-head (DA-4) system** for quality recording and playback in both SP (Standard Play) and LP (Long Play) modes.

High-quality sound
- **Conforms to the Hi-Fi VHS standard** for superlative stereo sound with a dynamic range of more than 90 dB.
- **New switching noise reduction system** for cleaner-than-ever high-fidelity sound reproduction.
- Hi-Fi recording level control with ALC switch.
- Peak-hold audio level indicators/Hi-Fi tracking meter.

Tuner features
- **PLL frequency synthesized wide-band cable tuner** with 48-channel storage capacity.
- **Pretuned to European television broadcast frequencies:** VHF, UHF and cable channels including those of **hyper band.***
- **Sound Multiplex capability** for recording stereo and bilingual broadcasts.
- **10-Key random-access channel selection** and up/down scan tuning.
- **Compatible with VPS (Video Programme System)** with built-in VPS decoder.

Remote control features
- **Independent timer programming** with LCD and built-in 4-programme memory.
- **10-Key random-access channel selection** and up/down scanning.
- **TV control** for power on/off, volume and channel selection (designated JVC TV models only).

Advanced tape access feature
- **VHS Index Search System** facilitates location of the beginning of each recording by automatically marking an index code on the control track of the tape; index codes can be specified with the 10-digit keypad, and detected in the Shuttle Search mode to locate up to 9 selections in either direction. This system is based on the newly standardised CTL coding system for VHS.
- **Counter go-to function** permits direct access to any point on a tape specified by keying in a counter number with the 10-digit keypad.
- Counter memory for returning to a point on a tape corresponding to the counter reading of "0000".

Convenient automatic functions
- **Auto play function:** insert a cassette (with safety tab removed), and playback will start automatically.
- **Next-function memory** allows a command to be entered immediately after pressing RÜCKLAUF (or VORLAUF), with the second command "remembered" and performed automatically after the tape rewinds to its beginning or fast-forwards to the counter reading of "0000".
  - Memory play; for automatic start of playback.
  - Memory eject: to eject the cassette after rewind, without waiting for completion of rewind to press the eject button.
  - Memory timer standby: to engage the timer recording standby mode after rewind.
  - Memory power-off: to turn the power off after rewind.
- Automatic backspace editing.
- Auto-power-on convenience.
- Power-off ejection.
- Automatic rewind at the end of tape.

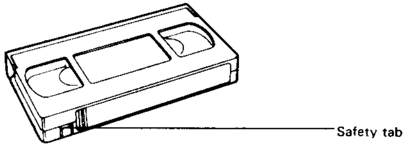
Other value features
- **1-Year/8-event remote-programmable timer** with SP/LP programming.
- **60-Minute memory backup** for clock and timer settings.
- **On-screen record-pause mode display** with elapsed time indicated by shrinking white bar.
- **FM simulcast recording:** also allows independent TV and audio programming on the same cassette.
- Instant recording function with auto shut-off.
- **Audio dubbing** to replace the linear soundtrack with new material.
- **Electronic tracking controls.**
- **Shuttle Search with latch function:** with the Shuttle Search button locked or held depressed, offers high-speed playback at 9 times normal speed in SP and LP modes.
- **Switchable AC outlet** to timer-control a connected source component.
- Frame advance.
- Comprehensive fluorescent display with symbolic mode indicators.
- Picture sharpness control.
- Remaining tape time indicator.

(*Applicable only in certain areas.)

PRECAUTIONS

Handling and storage
- Avoid using the recorder under the following conditions:
  - extremely hot, cold or humid places,
  - dusty places,
  - near appliances generating strong magnetic fields,
  - places subject to vibrations, and
  - poorly ventilated places.
- Be careful of moisture condensation.
  Avoid using the recorder immediately after moving from a cold place to a warm place or soon after heating a room which was cold. The water vapour in warm air will condense on the still-cold video head drum and tape guides and may cause damage to the tape and the recorder.
- Handle the recorder carefully.
  - Do not block the ventilation openings.
  - Do not place anything heavy on the recorder.
  - Do not place anything which might spill and cause trouble on the top cover of the recorder.
  - Use in horizontal (flat) position only.
- In case of transportation,
  - Avoid violent shocks to the recorder during packing and transportation.
  - Before packing, be sure to remove the cassette from the recorder.

Video cassettes
- This recorder employs VHS-type cassettes only.
  E-240 for 4 hours/8 hours, E-180 for 3 hours/6 hours, E-120 for 2 hours/4 hours, E-90 for 1 hour and 30 minutes/3 hours, E-60 for 1 hour/2 hours and E-30 for 30 minutes/1 hour of recording.
- Video cassettes are equipped with a safety tab to prevent accidental erasure. When the tab is removed, recording cannot be performed. If you wish to record on a cassette whose tab has already been removed, use adhesive tape to block the hole.



- Avoid exposing the cassettes to direct sunlight. Keep them away from heaters.
- Avoid extreme humidity, violent vibrations or shocks, strong magnetic fields (near a motor, transformer or magnet) and dusty places.
- Place the cassettes in cassette cases and position vertically.

Moisture condensation
- If you pour a cold liquid into a glass, water vapour in the air will condense on the surface of the glass. This is called moisture condensation.
- Moisture condensation on the head drum, one of the most crucial parts of the video recorder, will cause damage to the tape.
- Moisture in the air will condense on the recorder when you move it from a cold place to a warm place, after heating a cold room or under extremely humid conditions.
- In conditions where moisture condensation may occur, keep the power cord plugged in an AC outlet and the OPERATE switch set to ON; this would help prevent condensation from occurring. When condensation has occurred, it will not evaporate quickly once the power is switched on. Wait a few hours for the recorder to become dry.

Operation
- When a cassette is loaded, the power is switched on automatically.
- The cassette can be unloaded even when the power is off. Pressing the KASSETTE button turns the power on and, after ejection of the cassette, shuts it off automatically in this case.
- As long as the SCHALTUHR button is engaged with the TIMER indicator lit, the BETRIEB and KASSETTE buttons have no effect and unloading of a cassette is not possible. If a cassette has not yet been inserted, simply insert a cassette; the power will be switched on to load the cassette properly and, after completion of automatic loading, the Timer Recording Standby mode will be engaged with power off.

Remote control unit
- Avoid violent shocks, especially take care not to drop the unit.
- Take care not to allow liquid to spill into the unit.
- Do not place heavy objects on the unit.
- Avoid leaving the unit in places subject to direct sunlight or extremely high temperatures.

WARNING
1. This recorder can also receive colour television signals in East Germany (DDR) for recording and playback.
2. Recordings made of DDR television signals produce monochrome pictures if played back on another video recorder of PAL or SECAM standard.
3. SECAM prerecorded cassettes or recordings made with a SECAM video recorder produce monochrome pictures when played back with this recorder.
4. This recorder cannot be used in France. Use a SECAM recorder to record French SECAM signals.

CONTROLS, INDICATORS AND CONNECTORS

Refer to the diagrams on the front foldout page.

Front Panel

❶ **Operate button (BETRIEB) with green indicator**
Press to apply operating power to the recorder. The indicator will light. Loading a cassette also turns the power on.

❷ **Cassette eject button (KASSETTE)**

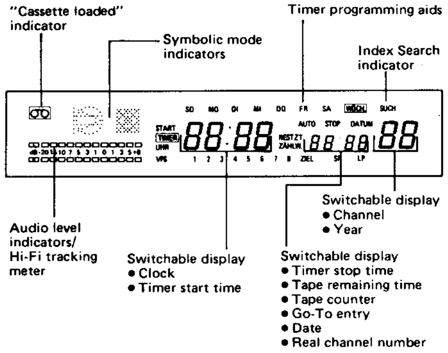
❸ **Infrared beam receiving window (FERNB. SENSOR)**

❹ **Cassette loading slot**
Insert a VHS cassette. The door will close and the "cassette loaded" indicator will appear on the FDP (fluorescent display panel).

❺ **LED indicators**

STEREO : Lights when a stereo programme is being received.
2-KANAL : Lights when a bilingual programme is being received.
DIGITAL : Lights when the Digital Memory is in operation.
SIMULTAN : Lights when the AUFNAHMEWAHL switch ● is set to SIMUL.

❻ **Fluorescent display panel**
Fully explained in relevant sections.


"Cassette loaded" indicator
Symbolic mode indicators
Timer programming aids
Index Search indicator
SO MO DI MI DO FR SA WÖCH SUCH
START TIMER UHR VPS
AUTO STOP DATUM
RESTZT. ZÄHLW.
1 2 3 4 5 6 7 8 ZIEL SP LP
Audio level indicators/ Hi-Fi tracking meter
Switchable display • Clock • Timer start time
Switchable display • Timer stop time • Tape remaining time • Tape counter • Go-To entry • Date • Real channel number
Switchable display • Channel • Year

❼ **Headphone level control (KOPFHÖRERPEGEL)**
Adjusts the level of audio output from the headphone jack.

❽ **Headphone jack (KOPFHÖRER)**

❾ **Mic jack (MIKROFON)**

● **Play/x2 button (WIEDERGABE/x2)**
Press once to play back the tape; press again for double-speed playback. Also press this button to cancel the Pause/Still, Slow and Search modes.

● **Record button (AUFNAHME)**
Press together with the WIEDERGABE/x2 button ● for recording.

● **Audio dubbing button (VERTONUNG)**
Press together with the PAUSE/STANDB. button ●, then the WIEDERGABE/x2 button ● for audio dubbing.

● ***STOP button***
Press to stop the tape.

● ***Pause/Still button (PAUSE/STANDB.)***
Press to stop the tape temporarily to avoid recording of unwanted material or to view a still picture. The still picture can be advanced step by step or continuously.

● **Audio monitor indicators**
Show the selected audio channel (Hi-Fi STEREO, L, R and NORMAL).

● **Rewind and Fast-Forward (Shuttle Search) buttons (RÜCKLAUF and VORLAUF) (BILDSUCHLAUF)**
Press while in the Stop mode to rewind or fast-forward the tape; press while in the Play mode to view the speeded-up picture for programme search. See pages 41 and 45.

● **AUDIO MONITOR button**
Each time the button is pressed, the audio channel to be output changes and is indicated by the audio monitor indicators ●. See page 38.

● **Slow (–, +) buttons (ZEITLUPE)**
Press in the Play or Still mode to engage the Slow-Motion mode. To increase the speed, press "+" button; to decrease the speed, press "–" button. See page 41.

● **Search button (AUTO-SUCHLAUF)**
Press to initiate automatic scan tuning in the Real-channel mode. (See pages 25 and 36.)

● **Clock adjust button (UHREINSTELLUNG)**
Press to adjust the clock.

● **Cancel/Skip button (ÜBERSPRINGEN/LÖSCHEN)**
A dual-purpose switch. Use to clear the programmed data in the Timer Set mode or skip unnecessary channels in the Channel Set mode. (See page 36 or 48.)

● **Fine (–, +) button (FEIN)**
To fine-tune in to a certain station by shifting the frequency in both directions. (See page 36.)

● **Store button (SPEICHERN)**
Press to store necessary channels. (See page 36.)

● **VPS/Channel button (VPS/KANAL)**
Allows for VPS programming when pressed in the Timer Set mode. In all other modes, this button functions to engage the tuner in the Real-channel mode. (See pages 35, 36 and 49.)

● **Hi-Fi Audio recording level controls (AUDIO Hi-Fi AUFNAHMEAUSSTEUERUNG)**
Use to adjust the hi-fi audio recording level, referring to the audio level indicators on the FDP. See page 38.

● **Source select switch (AUFNAHMEWAHL)**

TUNER : To record signals coming from the built-in tuner.
SIMUL : To record the video signal and normal audio signal from the built-in tuner and the hi-fi audio signal from the rear panel AUDIO EING. connectors. When recording FM simulcast TV programmes, use this position.

● **AC online switch (NETZAUSGANG)**

AUS position : Power is available from the rear panel AC outlet regardless of whether the recorder is on or off.
EIN position : Power is available from the rear panel AC outlet only when the recorder is on. When used in combination with the built-in timer, this enables timer-controlled power supply for the connected equipment.

● **Level indicator switch (PEGELANZEIGE)**
Selects the function of the audio level indicators. See page 38.

● **Counter memory switch (ZÄHLWERKSPEICHER)**
When this switch is set to EIN, the tape will stop automatically at the counter reading of about "0000" in the Rewind or Fast Forward mode.

● **Automatic level control switch (AUDIOBEGRENZER)**
Set to AUS when adjusting the hi-fi audio recording level manually.

● **DISPLAY button**
Press to change the display from the Timer Set mode to the Clock mode. Usually use this button to switch the middle 4-digit display to tape counter (ZÄHLW.), remaining tape time (RESTZT.) and date (DATUM).

● **SP/LP button**
Press to select the recording mode (SP or LP).

● **Counter reset button (ZÄHLWERK-RÜCKST.)**
Press to reset the tape counter reading to "0000".

● **Go-to button (ZIELLAUF)**
Press to engage the counter Go-To mode. See page 45.

● **Multi-purpose numeric keys**

Channel selection:	See page 35.
Clock setting:	See page 34.
Timer programming:	See page 47 and 48.
Counter Go-To:	See page 45.
Index Search:	See page 45.
External source recording:	See page 50.

● **Programme button (AUFZ. NR.)**
Press to programme the timer.

● **Timer button (SCHALTUHR)**
Press to engage the timer recording standby mode.

● **TV PR. (–, +) buttons**
Press either button to scan a desired channel. These buttons can also be used as cursor keys for 10-key programming.

● **Instant record button (SOFORTAUFNAHME)**
Use this button to start recording instantly and stop automatically after a specific time. (See page 43.)

● **Tracking (–, +) controls (SPURLAGE)**
If noise bars are seen during playback (normal or slow), use these buttons to reduce them. The tracking is reset to standard when both buttons are pressed together, the cassette ejected, or the power turned off.

● **Picture sharpness control (BILDSCHÄRFE)**
Turn this knob clockwise to make the picture sharper. Turn counterclockwise to give the picture a softer tone. Effective only for playback pictures. (No effect for recording.)

● **Vertical lock control (V-BILDFANG)**
Turn this control to eliminate vertical jitters in the Still mode.

● **Hi-Fi/NORM MIX switch**
Set to EIN to listen to both the hi-fi and normal soundtracks simultaneously.

● **Tuner sound select switch (2-KANAL-TON)**

HAUPT : To record the main soundtrack (local language).
NEBEN : To record the sub soundtrack (foreign language).

See page 37.

Remote Control Unit

● **TV operate button (TV-BETRIEB)**
Press to turn the TV power on or off. (Designated TV models only.)

● **Timer button (SCHALTUHR)**
Press to engage the timer recording standby mode.

● **Video operate button (VIDEO-BETRIEB)**
Press to turn the recorder power on or off.

● **TV volume buttons (TV-LAUTSTÄRKE)**
Press "–" or "+" to decrease or increase the TV's sound volume.

● **TV channel button (TV-KANAL)**
Press to select a desired channel on the TV receiver.

Remote Control Unit

A/B mode switching

A switch on the back of the remote control labelled A/B is accessible when the battery compartment cover is removed.

- This switch is preset to the "A" position. Do not touch it unless you use two JVC video decks side by side.
- When you place two JVC video decks near each other, use this remote control in the "B" mode to prevent both decks from responding simultaneously to this remote control's signals. For this purpose, carefully follow the instructions below:
  (1) Unplug the power cord of the HR-D530EG from the AC outlet.
  (2) Set the remote control unit's A/B mode switch to "B".
  (3) Plug the power cord of the HR-D530EG into the AC outlet.
  (4) Turn on the power of the HR-D530EG using the remote control's VIDEO-BETRIEB button.
    - The HR-D530EG "memories" this B code and then will respond only to the signals of this remote control unit. The other deck will respond only to its remote control.

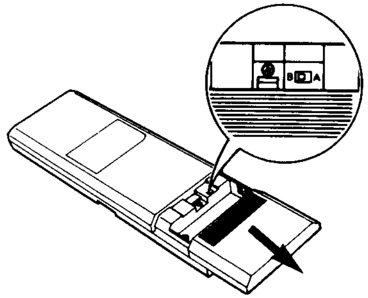
Note:
Do not operate other remote controls after you have plugged the HR-D530EG into the AC outlet and before you press the VIDEO-BETRIEB button of this remote control.

Operating distance for remote control unit

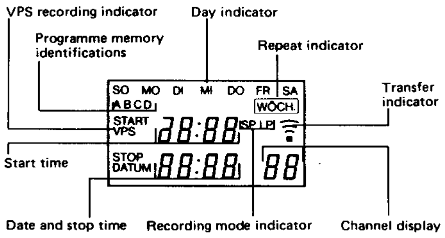
6 The maximum operating distance is about 8 m.

Installing the batteries

- Insert two "R6"-size batteries (provided) into the battery compartment on the rear of the remote control unit, observing correct polarity.



㊿ **LCD (Liquid Crystal Display) panel**
Refer to this panel when programming the remote control's *built-in timer memory.*

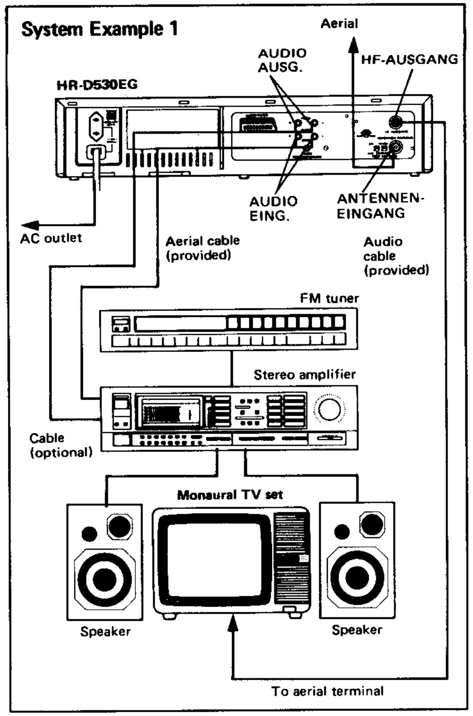

VPS recording indicator
Day indicator
Programme memory identifications
Repeat indicator
Transfer indicator
SO MO DI MI DO FR SA
ABCD
WÖCH.
START VPS
SP LP
Start time
STOP DATUM
Date and stop time
Recording mode indicator
Channel display

(51) **Memory programme button (SPEICHER AUFZ. NR.)**
Press to programme the remote control's timer memory.
(52) **Memory cancel button (SPEICHER LÖSCHEN)**
Press to cancel the programmed data in the remote control's timer memory.
(53) **Programme transfer button (ÜBERTRAG)**
Press to transfer the data held in the memory to the recorder.
(54) **Multi-purpose numeric keys**
(55) **VPS/Channel button (VPS/KANAL)**
(56) **Programme button**
Press to programme the recorder's timer memory directly from the remote control.
(57) **Cancel button (LÖSCHEN)**
Press to cancel the programmed data held in the recorder's timer memory.
(58) **CURSOR/TV PR. buttons**
(59) **SP/LP button**
(60) **Go-to button (ZIELLAUF)**
(61) **Display button (ANZEIGE)**
(62) **Counter reset button (ZÄHLWERK-RÜCKST.)**
(63) **DIGITAL MEMORY button**
Press once to engage the Digital Freeze mode; press again for strobing. For more details, see page 42.
(64) **Digital off button (DIGITAL AUS)**
Press to cancel the digital effects (Freeze, Strobe, Solarization). See page 42.
(65) **AUDIO MONITOR button**
(66) **Solarization button (SOLARISATION)**
Press to engage the Solarization mode; press to select between the three solarization effects in sequence. See page 42.
(67) **Slow (–, +) button (ZEITLUPE)**
(68) **Rewind and Fast-Forward (Shuttle search) buttons (RÜCK. and VOR.)**
(69) **Record button (AUFNAHME)**
(70) **Play/x2 button (WIEDERGABE/x2)**
(71) **Pause/Still button (PAUSE/STANDB.)**
(72) **STOP button**

Rear Panel

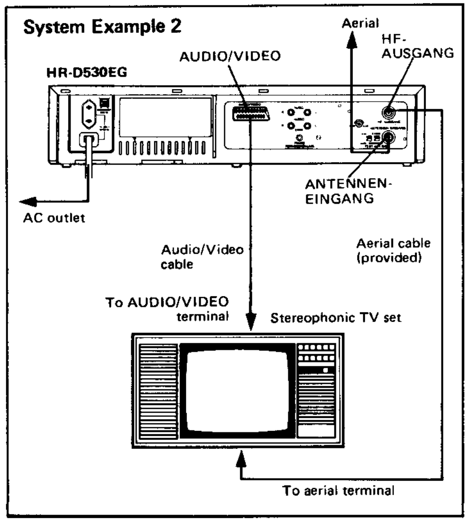
(73) **AC outlet**
Connect the power cord of other audio or video equipment (such as an FM tuner) requiring less than 2 A of current.
This outlet is controlled by the NETZAUSGANG switch ● .
(74) **AUDIO/VIDEO socket**
A 21-pin standardised audio/video input/output socket for the connection to a TV or a 2nd video recorder equipped with the same type of socket. The input from this socket can be recorded in the AUX mode engaged by obtaining "AU" in the channel display.
(75) **Audio output connectors (AUDIO AUSG.)**
Both hi-fi and normal audio signals can be obtained from these connectors. The output can be selected with the AUDIO MONITOR button (● , ●) and the Hi-Fi/NORM MIX switch ● .
(76) **Audio input connectors (AUDIO EING.)**
Connect an audio tape recorder or other audio sources for recording sound onto the hi-fi audio track.
(77) **RF converter frequency adjustment screw**
(78) **RF output connector (HF-AUSGANG)**
Connect to the aerail terminal of a TV receiver through the aerial cable (provided).
(79) **Aerial input connector (ANTENNEN-EINGANG)**
Connect an aerial to this connector.
(80) **Attenuator switch (ANT. SIGN.)**
Set to SCHWACH to receive broadcasts from distant stations. Set to STARK to receive broadcasts of high field strength.
(81) **TEST signal switch**
Set to EIN when tuning your TV receiver for the video channel. A test signal in the form of two vertical white bars will be available.
(82) **Remote pause control terminal (PAUSE FERNBEDIENUNG)**
When using a JVC video camera, connect the remote control cable of the camera adapter to this terminal for the purpose of controlling the starting and stopping of the tape with the camera's start/stop switch.
(83) **Power cord**

CONNECTIONS


System Example 1
Aerial
AUDIO AUSG.
HF-AUSGANG
HR-D530EG
AUDIO EING.
ANTENNEN-EINGANG
AC outlet
Aerial cable (provided)
Audio cable (provided)
FM tuner
Stereo amplifier
Cable (optional)
Monaural TV set
Speaker
Speaker
To aerial terminal

Procedure
1. Remove the aerial cable from the TV receiver and reconnect to the HR-D530EG.
2. Connect the HR-D530EG to the TV receiver using the aerial cable (provided).
3. Connect the AUDIO EING. L and R ● connectors of the HR-D530EG to the recording output terminals of the amplifier. (Exactly as one hooks up an audio cassette deck.)
4. Connect the AUDIO AUSG. L and R ● connectors of the HR-D530EG to the AUX IN or TAPE MONITOR terminals of the amplifier.

Notes:
- Observe L and R when connecting the audio input and output connectors of the HR-D530EG to a stereo amplifier.
- If stereo or bilingual TV broadcasts are receivable in your area, this recorder can record them independently of the TV set and play them back through the connected audio system.
- When listening to sound from the connected stereo system, turn down completely the sound volume of the TV receiver.
- Listening to stereophonic sound is also possible using stereo headphones connected to the front panel KOPFHÖRER jack. ⑧ .
- With this setup, you can enjoy prerecorded Hi-Fi VHS video tapes in hi-fi stereo while viewing them on a regular TV receiver, and also you can record FM simulcast television programmes with hi-fi audio accompaniment. See page 44.
- If you want to timer-control the recording of FM simulcast programmes, connect the tuner's power cord to the HR-D530EG's AC outlet. Set the NETZAUSGANG switch ● to EIN, and both the tuner and the HR-D530EG will be switched on at a time preprogrammed by the HR-D530EG. Timer-controlled recording of FM simulcast programmes is not possible with the type of tuners which reset the channel each time the power is switched off.


System Example 2
Aerial
HF-AUSGANG
AUDIO/VIDEO
HR-D530EG
ANTENNEN-EINGANG
AC outlet
Audio/Video cable
Aerial cable (provided)
To AUDIO/VIDEO terminal
Stereophonic TV set
To aerial terminal

For customers who own a stereo TV equipped with a standardised audio/video socket

By connecting the 21-pin AUDIO/VIDEO socket ● of the HR-D530EG to your TV's audio/video socket, it is possible to play stereo tapes through the TV's speakers. In this case, use the A/V mode specified on your TV, instead of UHF channel 36.

CAUTION
- The HR-D530EG has a dynamic range of more than 90 dB with regards to its hi-fi audio capability. It is recommended that you check the maximum level if you are going to listen to the hi-fi audio signals through a stereo amplifier. A sudden surge in speaker input may cause speaker damage.
- Some speakers and televisions are specially shielded to prevent television interference. If both are of the non-shielded type, do not place the speakers adjacent to the TV set, otherwise the video playback picture will not be normal because of mutual interference.

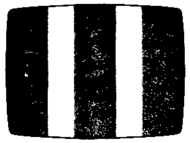
VIDEO CHANNEL SETTING

1 Press the BETRIEB button ❶ to turn the power on. Turn on the TV receiver.

2 Set the TEST switch ● to EIN.

3 Adjust your TV receiver in the vicinity of UHF channel 36 until you bring in the two white signal bars on the screen as illustrated. This is your VIDEO CHANNEL.

4 Reset the TEST switch to AUS.

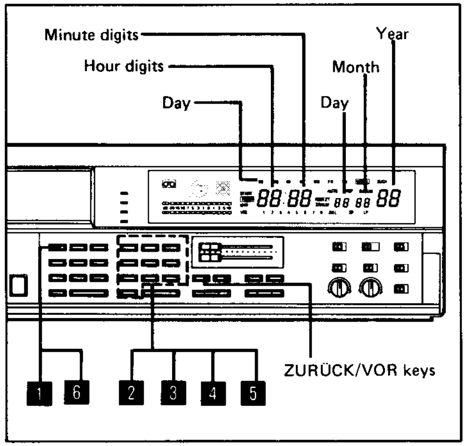


Notes:

- If some interference noise is seen on the screen because of broadcasts on neighbouring channels or if your preset broadcasts should be affected in picture quality, it is necessary to shift the RF converter output frequency from that of channel 36. Consult your JVC dealer for making this adjustment.
- Video channel setting is also possible using a prerecorded VHS video cassette. Play back the tape and tune the TV receiver to obtain clear pictures and sound while monitoring the playback picture on the TV screen.
- If your TV receiver is not provided with an AFC circuit, perform fine tuning of the TV receiver when you are actually viewing video cassettes.

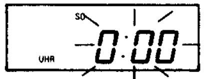
CLOCK SETTING

Plug the HR-D530EG into an AC outlet. The display shows a blinking 0:00 with SO and UHR illuminated.



Power failure indicator

The initial condition of the display is also a power failure indicator, showing that there has been a power failure exceeding 60 minutes. Re-adjusting the time restores the normal condition of the clock display.



1 Press UHREINSTELLUNG ● .
The display will change to the Clock Set mode with "SO" and "UHR" blinking.

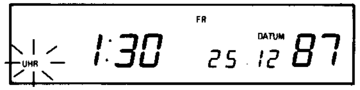
2 Press one of the numeric keys "1 (SO)" to "7 (SA)" that corresponds to the day of setting. The hour digits will start blinking.

3 Set the hour and minute in that order.
- The blinking position is ready for entry.
- To set a one-digit number, first press "0", then press the numeric key for 1 to 9.
- Zero will not be displayed in the tens place of the hour indication unless the cursor is moved back to the hour digits.
- For a two-digit number, simply press the corresponding numeric keys in the right order.
- In hour setting, numbers larger than 23 will be rejected.
- In minute setting, numbers larger than 59 will be rejected.

4 Set the day and month in that order.
- The setting method is the same as for time setting.
- In day setting, invalid numbers such as 32 of January or 30 of February will be rejected.
- 29 of February will be accepted only during leap years.
- In month setting, numbers larger than 12 will be rejected.

5 Set the year in the channel display section.
- Key in only the two last digits of the year.

6 Press UHREINSTELLUNG.
- Press it at the exact instant of the time signal, and the clock will be set accurately to the present time.

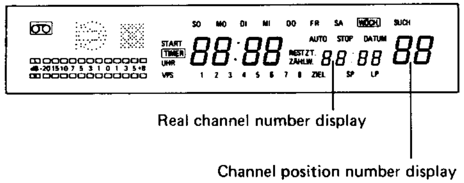


Notes:

- If you press a wrong numeric key, you can return to the previous position using the ZURÜCK "–" key ● .
- Once all necessary data have been entered, you can reach any position for correction using the ZURÜCK and VOR "–" and "+") keys.
- Clock setting is not possible during playback, or if the SCHALTUHR button ● is engaged with the TIMER indicator lit. First check to see that the TIMER indicator is off.

OPERATING THE BUILT-IN TUNER

The HR-D530EG incorporates an advanced frequency synthesized tuner which is pretuned to 112 channels to cover VHF, UHF and CATV broadcasts. Channel indication is given in two different ways: real channel numbers and channel position numbers. Real channel number indication is available by pressing the VPS/KANAL button ㉔ , while channel position number indication is always available in the channel display.



Correspondnece between 112 pretuned TV stations and the HR-D530EG's real channel indications

DISPLAY	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
Ch	–	E2	E3	E4	E5	E6	E7	E8	E9	E10	E11	E12	A	B	C	D	E	F	G	H
CC	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15	S16	S17	S18	S19	S20
	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	U1	U2	U3	U4	U5	U6	U7	U8	U9	U10
	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99
DISPLAY	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Ch	E21	E22	E23	E24	E25	E26	E27	E28	E29	E30	E31	E32	E33	E34	E35	E36	E37	E38	E39	E40
CC	S21	S22	S23	S24	S25	S26	S27	S28	S29	S30	S31	S32	S33	S34	S35	S36	S37	S38	S39	S40
DISPLAY	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Ch	E41	E42	E43	E44	E45	E46	E47	E48	E49	E50	E51	E52	E53	E54	E55	E56	E57	E58	E59	E60
CC	S41	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
DISPLAY	61	62	63	64	65	66	67	68	69			75	76	77						
Ch	E61	E62	E63	E64	E65	E66	E67	E68	E69			–	–	–						
CC	–	–	–	–	–	–	–	–	–			X	Y	Z						

Stored channels

A total of 112 channels are receivable. Of them, up to 48 can be stored for easy channel selection. Prior to shipment, some channels are stored.

It is possible to store more channels or skip some channels if there are no broadcasts on those channels in your area. It is possible to change the stored channels to correspond to your preferred channel allocation. Skipped channels can be restored whenever necessary.

- Channel memories are permanent; the programmed channel allocation will not be erased even if the recorder is unplugged from the AC outlet.

Channel selection

To select a channel for recording, normally use the TV PR. –/+ buttons ● (TV PR. –/+ button ● on remote control) or 10 numeric keys ● (● on remote control). You can choose any channel from among the stored ones by calling up the corresponding channel position number.

- Use the TV PR. "–" button to scan to a channel in the direction of decreasing numbers; the TV PR. "+" button, in the direction of increasing numbers.
- When using the 10 numeric keys, pay attention to the following: When 1, 2, 3 or 4 is entered, it blinks for about 2 seconds: To set channel 1, 2, 3 or 4, leave it blinking until it remains lit. To key in a two-digit number, enter the 2nd number while 1, 2, 3 or 4 is blinking. The number entered first will be shifted to the tens place and channels 10 to 48 can be set. If you enter an invalid number (larger than 48), the channel display will return to the previous figure after 2 seconds.

If you want to select a channel other than those stored, engage the Real Channel mode and call up a channel, while referring to the real channel number display.

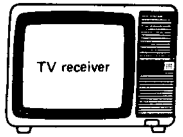
With recorder's controls:

- Press the VPS/KANAL button ● to engage the Real Channel mode and call up a channel by either pressing the AUTO-SUCHLAUF button ● or using the 10 numeric keys.

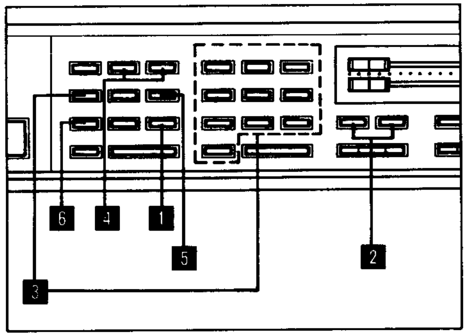
With remote control:

- Press the VPS/KANAL button ● to engage the Real Channel mode and call up a channel by using the 10 numeric keys.

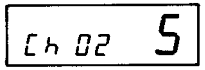
Changing the stored channels



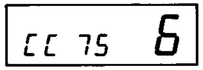
Turn the TV receiver to ON and adjust it to your video channel.



1 Press the VPS/KANAL button ● .
The middle 4-digit display will change to the Real Channel mode and show the band and real channel number of a station stored for that position.



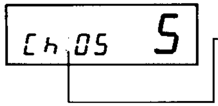
VHF channel 2 is stored for channel position 5.



Cable channel 75 is stored for channel position 6.

2 Call up the channel position number for which you wish to change the stored TV station.
●For this purpose, press either the TV PR. "–" or "+" button ● . Channel positions from 1 to 48 appear successively. "AU" indicates that the unit is in the external input mode usually referred to as AUX.

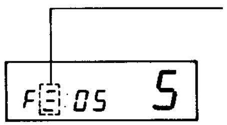
3 Select a TV station which you wish to store into the position.
●Pressing the VPS/KANAL button changes the band and alternates the band indication between "Ch" (for VHF and UHF) and "CC" (for Cable). Select the appropriate indication.
●You can scan to the real channel number corresponding to the desired station by pressing the AUTO-SUCHLAUF button ● . Pressing the AUTO-SUCHLAUF button initiates automatic scanning from real channel number Ch 02 to 69, CC 01 to 41, 75, 76, 77, then back to Ch 02. When a broadcast is detected, scanning stops automatically. To advance to the next station, press the AUTO-SUCHLAUF button.



"Colon" will appear to indicate that this real channel is not stored for the indicated channel position.

●You can key in that real channel number using 10 numeric keys ● . 70, 71, 72, 73, 74 and numbers larger than 77 are invalid numbers. If an invalid number is keyed in, the previously selected channel will be received.

4 If the picture quality is unsatisfactory due to ghosts or other noise, perform fine tuning.
●For this purpose, press either the FEIN "–" or "+" button ● . The Fine Tuning mode will be engaged.



Upper or lower "–" sign indicates the operating tuning frequency is above or below the standard broadcast frequency.
Center "–" sign will appear when it corresponds to the standard.

Then press either the FEIN "–" or "+" button, depending on the direction of fine adjustment, so that the picture clears up. Each time the button is pressed, the picture condition changes in a single increment. Continuous changing is also possible by keeping the button pressed. If the tuning frequency falls on the next station, the channel number advances as well. If no command is given for 2 seconds after either FEIN button has been pressed, the Fine Tuning mode will be automatically cancelled. To cancel the Fine Tuning mode instantly, press the VPS/KANAL button.
●If the picture is not clear after all procedures, perform fine tuning on your television.
●Distorted pictures or sound will be recorded if fine tuning has not been properly performed. Exercise care with this adjustment since the recorded picture and sound cannot be adjusted later.

5 After confirming both the real channel number and channel position number, press the SPEICHERN button ● .
"Colon" will disappear.
●The selected station will be stored in memory.

6 Press the DISPLAY button ● to disengage the Real Channel mode.

Skipping the stored channels

1. Call up the channel position number that you wish to skip by using the TV PR. buttons or 10 numeric keys.
2. Press the VPS/KANAL button.
3. Press the ÜBERSPRINGEN button ● .
"Colon" will appear to indicate that the displayed real channel is not stored.
4. Press the DISPLAY button to disengage the Real Channel mode.
●The skipped channel number will not appear on the channel display during up/down scan tuning.

Restoring the skipped channels

1. Press the VPS/KANAL button to engage the Real Channel mode.
●In this mode, all channel position number 1 through 48 are available in the channel display.
2. Select the channel position number that you wish to restore by using the TV PR. "–" or "+" button.
3. Select a real channel that you wish to restore in that channel position by using the AUTO-SUCHLAUF button or 10 numeric keys.
4. After confirming both the real channel number and channel position number, press the SPEICHERN button.
5. Press the DISPLAY button to disengage the Real Channel mode.

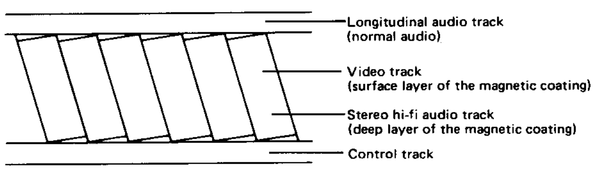
INFORMATION ON THE HR-D530EG'S AUDIO SYSTEM

Hi-Fi and normal audio

To provide true hi-fi audio accompaniment to video entertainment and, at the same time, compatibility with regular VHS tapes, the HR-D530EG employs a unique audio recording system. Hi-fi audio signals (2-channel) are recorded deep into the tape's magnetic coating, and the video signal is recorded on top of the audio signals in a shallower layer. At the same time, another audio head records normal audio signals (monaural) onto the usual longitudinal audio track. Since this longitudinal audio track is exactly the same as on regular VHS tapes, tapes recorded on the HR-D530EG can be played back on other VHS machines, and vice versa. Also, this longitudinal track can be replaced later with new recordings through audio dubbing.

CAUTION:
The hi-fi soundtrack recorded with the HR-D530EG cannot be reproduced with video equipment other than Hi-Fi VHS.

Tape pattern recorded with the HR-D530EG



Hi-fi audio recording and reproduction are available only from the hi-fi audio track while the longitudinal audio track provides normal audio.

The hi-fi and normal soundtracks are recorded simultaneously, and audio dubbing is applicable only to the normal audio.

Recording options according to the selected input mode

Track / Input mode	Video track	Normal audio track (mono)	Hi-fi audio track (2-channel)
TUNER AUFNAHME-WAHL TUNER SIMUL	TV picture (from built-in tuner)	TV sound (from built-in tuner)	TV sound (from built-in tuner) (Mixing with microphone input is possible.)
SIMUL AUFNAHME-WAHL TUNER SIMUL	TV picture (from built-in tuner)	TV sound (from built-in tuner)	Audio signal from AUDIO EING. (Mixing with microphone input is possible.)
AUX AU Channel display section	Video signal from AUDIO/VIDEO	Audio signal from AUDIO/VIDEO (Mixing with microphone input is possible.)	

Notes:
- To engage the AUX mode, press the "0" key of the 10-digit keypad.
- Microphone input will always be mixed with the audio signals on the hi-fi audio track. Therefore, do not leave a microphone connected to the MIKROFON jack unless needed.
- You can record audio only (without recording any video signal) on the hi-fi audio track. This means you can record a continuous 8-hour FM programme onto a single cassette (E-240). For this purpose, set the AUFNAHMEWAHL switch to SIMUL and connect an audio source, such as an FM tuner, to the AUDIO EING. connectors ● . And tune the built-in tuner to a vacant channel.

Recording options according to the type of broadcasts and the setting of the 2-KANAL-TON switch

Type of broadcast	2-KANAL-TON switch position / Audio Track	Normal audio track (mono)	Hi-fi audio track (2-channel) L	Hi-fi audio track (2-channel) R
Regular (monaural audio)	Either position	Mono	Mono	Mono
Stereo broadcast	Either position	L + R mixed	Stereo	
Bilingual broadcast	HAUPT	Main soundtrack (local language)	Main soundtrack (local language)	Sub soundtrack (foreign language)
	NEBEN	Sub soundtrack (foreign language)		

Hi-Fi audio recording level adjustment

While recording onto the normal audio track is controlled by the built-in Automatic Level Control circuit, hi-fi audio recording has two control options: manual and automatic.

Audio level indicators
For manual control of the recording level, first set the relevant switches as follows:

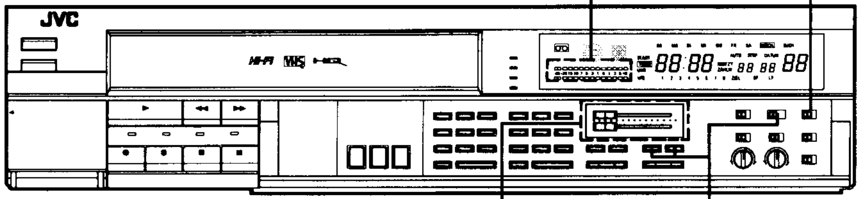
AUDIOBEGRENZER ● → AUS
PEGELANZEIGE ● → EIN
AUDIO MONITOR ● → Hi-Fi STEREO

Then slide the Hi-Fi recording level controls referring to these indicators. When indicators up to or near 0 dB light for the loudest signal being applied, the recording level is optimum. (The level at which only one red indicator lights from time to time may be most appropriate.)
During playback, these indicators show the level of audio signals recorded on the tape.
These indicators do not light when the PEGELANZEIGE switch is in the AUS position.

Notes:

- With the AUDIO MONITOR button set to L, R or NORMAL, the recording level of hi-fi audio signals cannot be correctly indicated. Select the Hi-Fi STEREO setting when adjusting the recording level.
- The normal audio signal level is also displayed by these indicators, but cannot be adjusted.

AUDIOBEGRENZER switch
Setting this switch to EIN activates the built-in audio limiter circuit for both channels so that the recording level is automatically controlled. For manual adjustment, set this switch to AUS. (The recording level for normal audio is always controlle automatically regardless of the setting of this switch.)



AUDIO Hi-Fi AUFNAHMEAUSSTEUERUNG controls
Slide these controls, the upper for left channel and the lower for right channel, for manual adjustment of the hi-fi audio recording level.

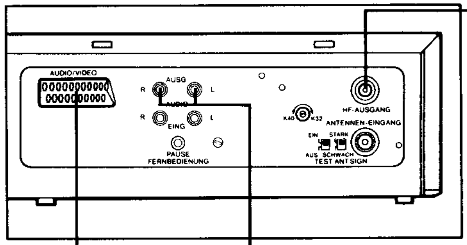
Note:
When a microphone is connected to the MIKROFON jack, set the AUDIO-BEGRENZER switch to the EIN position to protect against over-level input signals from the microphone.

PEGELANZEIGE switch and SPURLAGE buttons
The right-channel audio level indicator also functions as a tracking meter during playback. If noise or breaks are sensed in the reproduced sound from the hi-fi audio track or noise bars are visible on the screen, attempt to correct using the SPURLAGE buttons while referring to the meter. For this purpose, set this switch to Hi-Fi SPURLAGE and press the buttons so that the greatest number of elements of the right-channel indicator light. When this switch is set to AUS, the indicators do not light, regardless of whether during recording or playback.

Note:
When playing back a tape with no recording on the hi-fi audio track, the level indicator does not light when the PEGELANZEIGE switch is set to Hi-Fi SPURLAGE.

Dual-audio playback flexibility

Two different types of audio tracks (hi-fi and normal) allow a variety of playback options depending on the connection and the settings of relevant controls and switches.



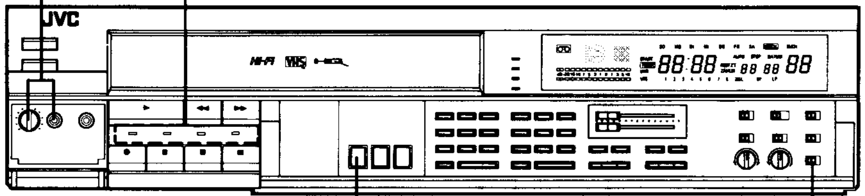
HF-AUSGANG connector
Delivers audio (both hi-fi and normal) and video signals to a TV receiver. When the recorder is not used, the aerial signal is supplied from this connector to the TV receiver to allow regular TV viewing; when a video tape is played back through the HF-AUSGANG connector, the audio is reproduced always as monaural; with hi-fi stereo tapes, both channels are mixed or the one selected by the AUDIO MONITOR button is reproduced. Therefore, for stereo playback, connect a stereo system to the AUDIO AUSG. connectors or a stereo television to the AUDIO/VIDEO socket. Refer to page 33.

AUDIO/VIDEO socket
Delivers audio (both hi-fi and normal) and video signals. (Also accepts audio and video signals for recording from other video equipment.)

AUDIO AUSG. connectors
Delivers the audio signals from both hi-fi and normal audio tracks.

KOPFHÖRER jack and KOPFHÖRERPEGEL control
Delivers the audio signals from both hi-fi and normal audio tracks. The headphone output level is adjustable with the KOPFHÖRERPEGEL control.

Audio select indicators (Hi-Fi STEREO, L, R, NORMAL)



AUDIO MONITOR button
Selects the hi-fi audio channel (left, right or both) or the normal soundtrack for listening. Use this button together with the Hi-Fi/NORM MIX switch referring to the four indicators (Hi-Fi STEREO, L, R and NORMAL).

- Set to Hi-Fi STEREO to listen to a stereo soundtrack.
- Set to L to listen to the hi-fi left channel sound.
- Set to R to listen to the hi-fi right channel sound.
- Set to NORMAL to listen to the normal sound.

Note:

- This button functions during recording as well, although it has no effect on the recorded signal.

Hi-Fi/NORM MIX switch
Operates in conjunction with the AUDIO MONITOR button to select soundtracks for listening.

- Set to EIN to listen to a mixture of Hi-Fi and normal soundtracks by selecting the combination with the AUDIO MONITOR button.

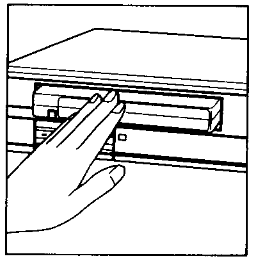
Notes:

- This switch functions during recording as well, although it has no effect on the recorded signal.
- When playing back a tape containing the same soundtrack on both hi-fi and normal audio tracks, a slight time lag is sensed between the two soundtracks, probably with some distortion, in the EIN position. Therefore, in such a case, use the AUS position.
- Set to AUS to listen to each soundtrack independently by selecting it with the AUDIO MONITOR button.

LOADING AND UNLOADING A CASSETTE

Loading

Insert a cassette as illustrated. Be sure to insert it firmly into the slot; otherwise, it will be automatically ejected.



- The automatic loading mechanism will operate only when the cassette is inserted correctly.
- With a cassette inserted, the "cassette loaded" indicator will appear on the FDP.

Unloading

Press the KASSETTE button ●.

CAUTION

- If unloading of the cassette is not possible, check to see whether the TIMER indicator is lit. If so, press the SCHALTUHR button so the TIMER indicator extinguishes.
- Do not attempt to pull out the cassette once automatic loading has started.
- Do not insert fingers or any foreign object beyond the door of the cassette loading slot, as this could lead to injury or damage to the mechanism. Show special caution with children.

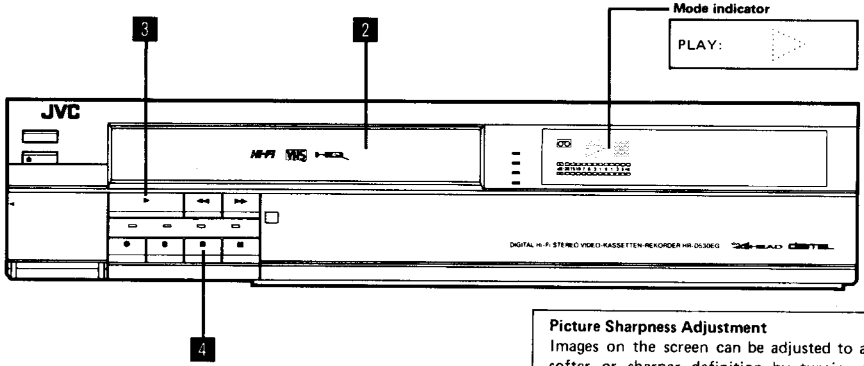
AUTO POWER-ON AND AUTO PLAY SYSTEM

- The cassette can be loaded even when the power has not been turned on. Inserting a cassette into the loading slot turns the power on automatically.
- Inserting a cassette, with its safety tab removed, turns the recorder on and playback of the cassette begins automatically.

POWER-OFF EJECT SYSTEM

- The cassette can be unloaded even after the power has been turned off. Pressing the KASSETTE button turns the power on automatically and, after ejection of the cassette, shuts it off automatically.

BASIC OPERATION FOR PLAYING BACK A VIDEO CASSETTE



1 Turn the TV receiver on and adjust it to your video channel.

2 Load a pre-recorded cassette.
- Power will be switched on automatically.
- When the cassette loaded has no safety tab, playback will start automatically.

3 Press WIEDERGABE/X2 ●.
- The SP/LP button may be in either position. The SP or LP mode recording is automatically detected and played back at a correct speed respectively with the corresponding indicator lit on the FDP.

4 Press STOP ● at the end of the programme.
- The tape will be rewound automatically when its end is reached and the recorder will enter the Stop mode.

Picture Sharpness Adjustment

Images on the screen can be adjusted to a preferred softer or sharper definition by turning the BILDSCHÄRFE control ● in the corresponding direction.

Tracking Adjustment

Noise bars may appear on the screen if you play back a tape which was recorded using another recorder. For correction, press either SPURLAGE button ●. Tracking will be reset to the preset standard each time the cassette is ejected.

CAUTION:

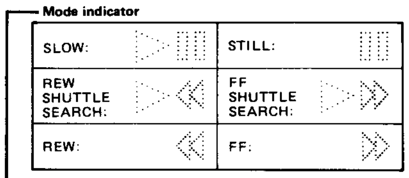
When a tape recorded from SECAM B/G broadcasts in the LP mode is played back, colours disappear if special-effects (still and shuttle search) are applied.

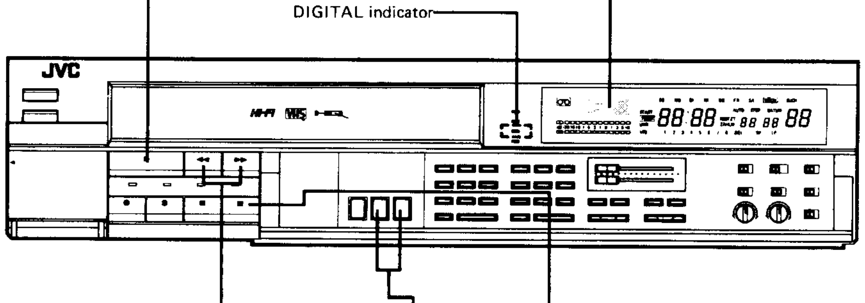
SPECIAL-EFFECTS PLAYBACK

When one of the following modes (except Shuttle Search) is engaged, the digital circuitry is automatically activated to help compensate for picture quality deterioration. Therefore, stills, slow-motion and double-speed pictures are all cleaner than before.

DOUBLE-SPEED PLAYBACK

- Press WIEDERGABE/X2 ● while in the Play mode; double-speed playback will be engaged.
- To resume normal playback, press the same button again.
- The "DIGITAL" indicator will remain lit while in the Double-speed mode.





SHUTTLE SEARCH

Shuttle Search allows high-speed playback at 9 times normal speed in either direction.

1. Press either RÜCKLAUF or VORLAUF BILDSUCHLAUF ● during playback.
2. To cancel the Search mode, press WIEDERGABE/x2.
   - For briefer scanning, keep the BILDSUCHLAUF button pressed for more than 2 seconds, when you release the button, the Search mode will be cancelled.

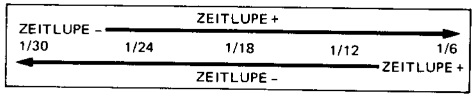
STILL PICTURE

1. Press PAUSE/STANDB. ● during playback.
2. To advance the still picture, press PAUSE/STANDB. a number of times.
- The "DIGITAL" indicator will remain lit while in the Still mode.
3. To cancel the Still mode, press WIEDERGABE/x2.

Notes:
- When the Still mode continues for longer than about 5 minutes, the Stop mode will be entered automatically.
- With some televisions, the still picture may be unstable. This is not due to any defect of the unit.

SLOW-MOTION PLAYBACK

- Press the "–" button while in the Play mode, slow-motion playback at 1/30 normal speed will start.
- Press the "+" button while in the Play mode; slow-motion playback at 1/6 normal speed will start.
- Each time the "–" button is pressed, the tape speed becomes slower.
- Each time the "+" button is pressed, the tape speed becomes faster.
- To return to the normal Play mode, press the WIEDERGABE/x2 button.



- The "DIGITAL" indicator will remain lit while in the slow-motion mode.

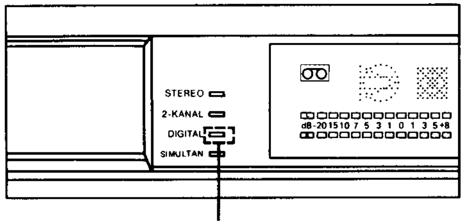
DIGITAL-EFFECTS PLAYBACK

The HR-D530EG incorporates digital memory circuits (six DRAMs) to provide a variety of special effects while watching a recorded tape or a regular television broadcast.

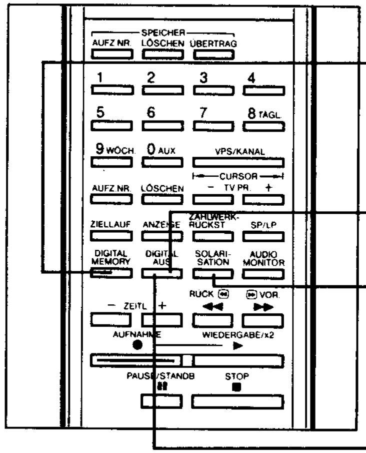
Freeze-frame: A still picture stored digitally in the memory is frozen on the TV screen while the tape or regular broadcast continues.

Strobe effect: A still picture selected at regular intervals from a tape or TV broadcast and stored digitally in the memory, is continuously played back on the screen while the tape or regular broadcast continues. In this mode, the regular changes in the stored picture result in a strobe-light or time-lapse effect.

Solarization: 3 different solarization effects can be added to pictures during playback or viewing of a regular TV broadcast.



DIGITAL indicator



FREEZE-FRAME/STROBE-EFFECT PLAYBACK

- Press DIGITAL MEMORY ● while in the Play mode; the image will be frozen on the screen while normal sound continues.
- Press again; the still picture will be switched at regular intervals, giving a strobe effect.
- Press again; the still picture will be switched at shorter intervals, giving a quicker strobe effect.
- Pressing the button again engages the Freeze-frame mode.
- The "DIGITAL" indicator will remain lit while the DIGITAL MEMORY button is being used.
- To restore normal recording or playback, press the DIGITAL AUS button.

PLAYBACK WITH SOLARIZATION EFFECTS

- Press SOLARISATION ● while in the Play mode; the picture will be solarized.
- Press again; a different solarization effect will occur.
- Press again; the solarization effect will change once again.
- Pressing the button again restores the initial Solarization mode.
- The "DIGITAL" indicator will remain lit while the solarization effect is in use.
- To restore normal pictures, press the DIGITAL AUS button.

SPECIAL-EFFECTS TELEVISION VIEWING

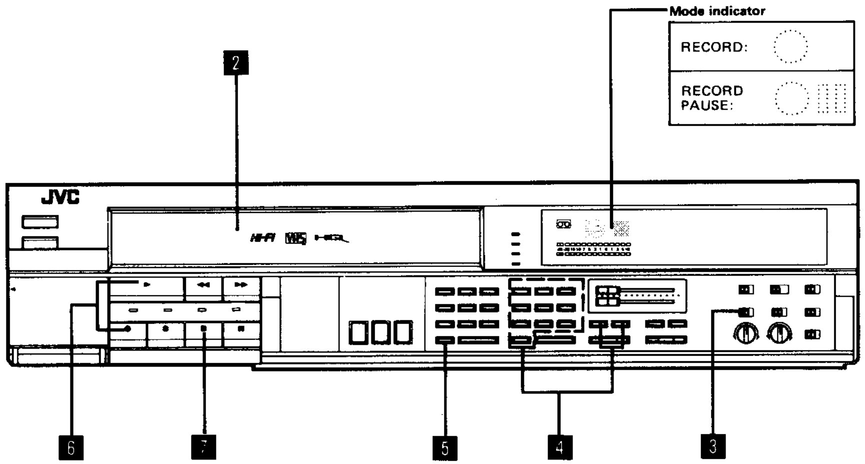
To use the HR-D530EG as a special-effects generator while watching television:

- Turn the HR-D530EG's power on.
- Set the TV receiver to your video channel.
- Select the channel you wish to view with the HR-D530EG's channel selector.
- While using freeze-frame and strobe-effect modes, the regular broadcast continues unseen and the audio portion of the broadcast can be heard as usual.

Notes.

- If off-air signals are distorted or weak, or the tuned-in channel is switched when the digital memory is being used, the memory is automatically reset and the screen will change to normal pictures.
- With some tapes, the playback picture may be unstable in digital mode. This is not due to any defect of the unit.

BASIC OPERATION FOR RECORDING TV PROGRAMMES



1 Turn the TV receiver on and adjust it to your video channel.

2 Load a cassette (with safety tab in place).
- Power will be switched on automatically.

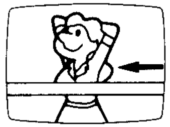
3 Set AUFNAHMEWAHL ● to TUNER.

4 Press either TV PR. ● or the numeric keys ● to select the channel you wish to record.

5 Select the recording speed (SP or LP).
SP: 4 hours with an E-240 cassette.
LP: 8 hours with an E-240 cassette.

6 Press AUFNAHME ● and WIEDERGABE/X2 ● simultaneously.
- If there is part of the programme you don't want to record, press PAUSE/STANDB. ● . A white horizontal bar will appear on the screen, which reduces in size in 4 steps as time elapses. When the last quarter starts blinking and disappears, the Stop mode will be entered automatically. The pause duration is possible for about 5 minutes.

Pause mode indicator



- To continue recording from the Pause mode, press WIEDERGABE/X2 while the white bar is on-screen.

7 Press STOP ● at the end of the programme.
- When the end of the tape is reached during recording, the tape is automatically rewound and stops.

Notes:

- When recording is restarted from the Pause mode, a few frames recorded before are erased due to overlap of the new recording. This is not due to any defect of the unit.
- The selected channel cannot be altered during recording. If you wish to change the channel, first engage the Pause mode and then select a different channel.

INSTANT RECORDING

If you need to start recording instantly from other modes or wish for recording to stop automatically after a certain period of time, use this Instant Recording mode.

1. Press SOFORTAUFNAHME ● .
   - The FDP shows "AUTO STOP ––:––".
2. Press SOFORTAUFNAHME once again within 10 seconds.
   - Recording will begin and the FDP shows "AUTO STOP 0:30", indicating that recording will automatically stop and power will switch off after 30 minutes.
3. Adjust the switch-off time, if necessary.
   - Press SOFORTAUFNAHME to increase the time in 30-minute increments (possible up to 4-hours).
   - Use the numeric keys to set to a more precise time when required (possible up to 9 hours 59 minutes). Always key in a full number including hours and minutes. For "0:35", key in zero first. After setting the time, press SOFORTAUFNAHME immediately.

Notes:

- Instant recording has priority over all other modes.

OTHER RECORDING POSSIBILITIES

RECORDING A TV PROGRAMME WHILE WATCHING ANOTHER

A programme not being viewed can be recorded while you enjoy another programme. This permits the recorded programme to be played back later at your convenience.
The recording procedure is exactly the same as described on the previous page. The points to be remembered are:

- Select the channel you wish to record with the recorder's channel select buttons.
- Select the channel you wish to view with the TV receiver's channel selector.

RECORDING STEREO TV PROGRAMMES

(Applicable only to the West German Sound-Multiplex TV system)
If stereo TV programmes are broadcast in your area, the HR-D530EG automatically receives them in stereo. When a stereo programme is being received, the STEREO indicator lights and recording is made in stereo on the hi-fi audio track and in mono (mixed L + R) on the normal audio track. To listen to the stereo soundtrack during recording, set the AUDIO MONITOR button ● for Hi-Fi STEREO. If this button is left either in the L or R position, you will hear only one channel while recording, though the recording is being made in stereo.

RECORDING BILINGUAL TV PROGRAMMES

(Applicable only to the West German Sound-Multiplex TV system)
When a bilingual TV programme is being received, the 2-KANAL indicator lights. There is a switch to select the soundtrack to be recorded on the normal audio track, however, because both soundtracks are recorded always on the hi-fi track for selective listening, you can ignore the switch labelled 2-KANAL-TON in most cases unless you need a specific soundtrack on the normal audio track.

- Set 2-KANAL-TON switch ● to HAUPT to record the main soundtrack (local language); to NEBEN to record the sub soundtrack (foreign language).
- To listen to the selected soundtrack from the hi-fi audio track while recording, set the AUDIO MONITOR button for either L or R.
- To listen to the soundtrack being recorded on the normal audio track, set the AUDIO MONITOR button for NORMAL.

RECORDING FM SIMULCAST TV PROGRAMMES

FM simulcast TV programmes can be recorded using an FM stereo tuner. Connect necessary components. (Connect the FM tuner to the rear panel AUDIO EING. connectors.) Select the TV channel broadcasting the simulcast programme with the recorder's channel select buttons and tune the FM stereo tuner to the station broadcasting the soundtrack for this TV programme.
The only difference from the basic recording procedure is in step 3 on page 43.

- Set AUFNAHMEWAHL ● to SIMUL.
  Then the **SIMULTAN** indicator will light. With this setting, the video and audio signals from the built-in tuner will be recorded on the video and normal audio track and the audio signal from the FM stereo tuner will be recorded on the hi-fi audio track.

Notes:

- After finishing recording, be sure to set the AUFNAHMEWAHL switch back to TUNER.
- While recording simulcast programmes, it might happen that the hi-fi sound distorts momentarily at switching points between different programmes. This is not due to any defect of the unit.

RECORDING A TV PROGRAMME WHILE RECORDING AN INDEPENDENT AUDIO SOURCE

Using the "simulcast" recording function, you can record independent audio and video programmes, because the TV soundtrack is not lost, but recorded on the normal audio track. While recording a TV programme, record any audio source independently.

- Connect an audio component (such as an FM tuner) to the AUDIO EING. connectors.
- Set the AUFNAHMEWAHL switch to SIMUL.

Notes:

- If you stop recording to avoid unwanted material of the TV programme using the PAUSE/STANDB. button, the audio programme from an external source is also cut.
- If television broadcasting comes to an end during recording, the hi-fi sound being recorded from an external source may distort. It is recommended that you check the timetable of TV broadcasts in advance.
- After finishing recording, be sure to set the AUFNAHMEWAHL switch back to TUNER, otherwise recording on the hi-fi audio track from the built-in tuner will not be possible.

USING THE HR-D530EG AS AN AUDIO TAPE DECK

You can record audio only (without recording any video signal) on the hi-fi audio track. This means you can record a continuous 8-hour FM programme onto a single cassette (E-240).

- Connect an audio source (such as an FM tuner) to the AUDIO EING. connectors.
- Tune the built-in tuner to a vacant channel.
- Set the AUFNAHMEWAHL switch to SIMUL.

INDEX SEARCH FUNCTION

VHS Index Search System

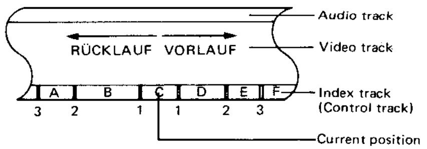
When you start recording from the Stop or Timer Standby mode, an index code is marked on the tape. These index codes can be detected in the Shuttle Search mode for automatic start of normal playback.

1. Press WIEDERGABE/X2 ● to start playback.
2. Specify the number of codes by which you wish to skip, by keying in that number with the numeric keys ● .
   - The SUCH indicator and the specified number will appear in the FDP.
3. Press either VORLAUF or RÜCKLAUF ● within 2 seconds.
   - The tape will move fast and the index number will count down to "zero", where normal playback will start.

Notes:

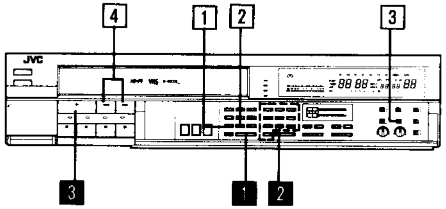
- To cancel the Index Search mode before completion, press the WIEDERGABE/x2 or STOP button.
- If the end of the tape is reached while still in the Index Search mode, the mode is cancelled and the tape is rewound.

Tips for specifying the index number



- "1" + VORLAUF moves playback to the beginning of segment D.
- "1" + RÜCKLAUF moves playback to the beginning of segment C.
- "2" + RÜCKLAUF moves playback to the beginning of segment B.
- If no number is entered, a value of "1" is assumed.

COUNTER GO-TO AND COUNTER SEARCH



Counter Search

The counter reading of "0000" can be located automatically.

1. Press DISPLAY ● to obtain the Counter mode.
2. Press ZÄHLWERK-RÜCKST. ● during playback or recording at a point which you wish to locate later.
3. Set RÜCKLAUF or VORLAUF ● to EIN.
4. Press RÜCKLAUF or VORLAUF ● when you need to return to the designated point.
   - The tape will stop automatically at about "0000".
   - When used in conjunction with the Memory Play function, this offers more convenience. See next page.

Counter Go-To

Specify the desired counter number, and the tape will be fast-forwarded or rewound to that point for automatic playback.

1. Press ZIELLAUF ● in the Stop mode.
   - The counter will display the current position of the tape as calculated from the leader at the beginning of the tape.
2. Specify the counter number of the point you wish to locate, using the numeric keys ● .
3. Press WIEDERGABE/X2 ● .
   - The tape will be fast-forwarded or rewound depending on the relative position of the specified point, at which playback will start automatically.

Notes:

- If the recorder has not detected the leader tape since the tape was loaded, no number will be displayed when the ZIELLAUF button is pressed, but after pressing the WIEDERGABE/x2 button, the tape will be rewound to the beginning (to enable counting from the leader) before fast-forward to the desired location.
- If the specified number exceeds the length of the tape, as calculated from the leader, the tape will fast-forward to the end, rewind to the beginning and then enter the Play mode.

REMAINING TAPE TIME INDICATOR

The tape counter is switchable to the remaining tape time indicator.

1. Press DISPLAY ● to obtain the Remain mode.
2. The remaining tape length will be shown in hours and minutes.

Notes:

- During recording, the remaining tape length is calculated in reference to the recording mode selected by the SP/LP button; during playback, it is calculated in reference to the recording mode of the tape being played (SP/LP).
- The indicated remaining time is approximate. The time required to calculate the remaining tape length and the accuracy of that calculation may vary according to the type of cassette tape. (The remaining time indication is not available if this mode is engaged from Fast Forward or Rewind.)

NEXT-FUNCTION MEMORY

Memory Play function

- If you want to watch the tape from its beginning after rewinding, press RÜCKLAUF and then WIEDERGABE/x2 within 2 seconds. Playback will start automatically at the beginning of the tape. (The ZÄHLWERKSPEICHER switch ● must be in the AUS position.)
- If you want to watch the tape from the counter reading of "0000", set ZÄHLWERKSPEICHER to EIN, then RÜCKLAUF (or VORLAUF) and then WIEDERGABE/X2 within 2 seconds.
- While the tape is being rewound, the PLAY indicator is blinking. To cancel the Memory Play mode and go to another mode, press the corresponding button (STOP, WIEDERGABE/x2, VORLAUF, RÜCKLAUF).

Memory Eject/Power-Off/Timer Standby

If you are going to eject the cassette, turn the power off or engage the Timer Standby mode after rewinding the tape, you do not have to wait for completion of rewind to press the corresponding button.

- To eject the cassette after rewind, press RÜCKLAUF and then KASSETTE within 2 seconds. (To cancel the Memory Eject mode, press STOP.)
- To turn the power off after rewind, press RÜCKLAUF and then BETRIEB within 2 seconds. (To cancel the Memory Power-off mode, press BETRIEB.)
- To engage the Timer Standby mode after rewind, press RÜCKLAUF and then SCHALTUHR within 2 seconds. (To cancel the Memory Timer Standby mode, press SCHALTUHR.)

Memory Play	RÜCKLAUF/ VORLAUF	→	WIEDERGABE /x2	PLAY	Blinking	→	Play mode
Memory Eject	RÜCKLAUF	→	KASSETTE	☐	Blinking	→	Cassette ejected
Memory Power-off	RÜCKLAUF	→	BETRIEB	BETRIEB	Blinking	→	Power off
Memory Timer Standby	RÜCKLAUF	→	SCHALTUHR	TIMER	Lights	→	Timer standby mode
	within 2 seconds						

AUTOMATIC TIMER RECORDING

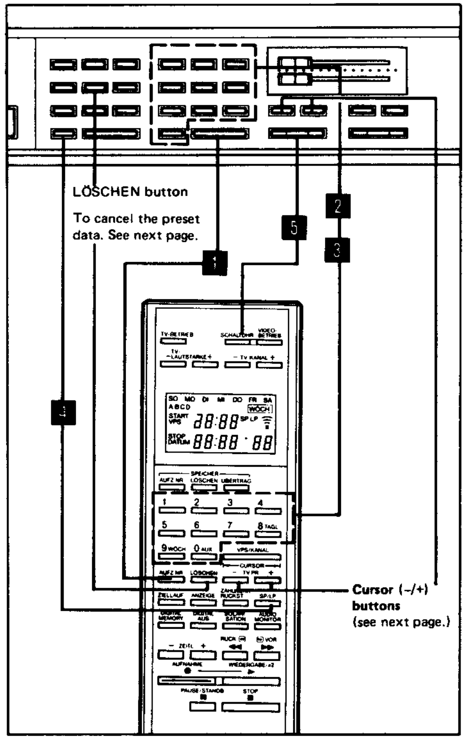
First of all, load a cassette (with safety tab in-place); power will be switched on automatically.

Three ways to perform timer programming

A. **Local programming:** Programme the timer using the recorder's controls while referring to the recorder's FDP.

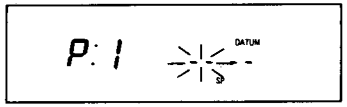
B. **Direct remote programming:** Programme the timer using the remote control's keys while referring to the recorder's FDP.

C. **Independent remote programming:** Programme the remote control's memory using the remote control's keys while referring to its own LCD and then transfer the data to the recorder.

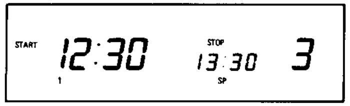


A. Local Programming

1. Press AUFZ. NR. ● .
   - The display will change to the Timer Set mode for programme number "1". To advance to programme numbers 2 – 8, press AUFZ. NR.



2. Enter the date using numeric keys ● .
   - Invalid numbers will be rejected.
   - To record a daily serial starting on the day of setting, press VOR "+" ● without entering any date figure.
   - To record a daily serial starting on a certain day, press TÄGL. (8) and enter the date.
   - To record a weekly serial, press WÖCH. (9) and enter the date.
   - Both "daily" and "weekly" commands can be entered or cancelled by pressing the corresponding button any time in the date and time setting stages.
3. When the display changes to the next stage, key in the start time, stop time and channel in succession using numeric keys.
   - To key in a one-digit number of hours or minutes, first press "0". Then press the relevant numeric key.
   - For keying in channel numbers, refer to page 35.



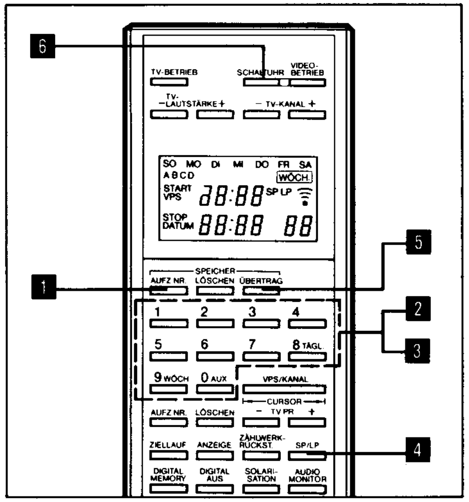
4. Press SP/LP ● to obtain the desired recording mode indication on the display.
   - The SP or LP entry can be made anytime while in the Timer Set mode.
5. After making sure that the cassette is loaded, press SCHALTUHR ● .
   - The Timer Recording Standby mode will be engaged with the TIMER indicator and the press programme number(s) illuminated and the power turned off.
   - With no cassette loaded, the TIMER and "cassette loaded" indicators will continue blinking.
   - A cassette whose safety tab has been removed will be rejected automatically.
   - If a preset programme contains errors, that programme number will not be illuminated. Recheck the programmed data.

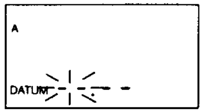
B. Direct Remote Programming

Following the procedures above, use the remote control's buttons instead of the recorder's with the remote control directed toward the recorder's FERNB. SENSOR window ❸

C. Independent Remote Programming

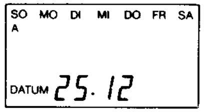
- The remote control incorporates 4 programme memories (A, B, C and D).
- The programmed data is held in memory even after it has been transferred to the recorder.



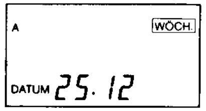


1 Press SPEICHER AUFZ. NR. ● .
- The LCD will be activated for programme memory "A".
- To advance to programmes B to D, press again.

2 Enter the date using numeric keys ● .
- Setting for a daily or weekly serial is the same as described in "A. Local Programming".

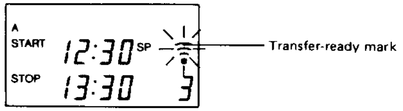


For daily serial setting



For weekly serial setting

3 When the display changes to the next stage, enter the start time, stop time and channel in succession.
- After the channel has been entered, the transfer-ready mark will appear and blink.



4 Press SP/LP ● to obtain the desired recording mode indication on the display.
- The SP or LP entry can be made anytime while in the Timer Set mode.

5 Direct the remote control to the recorder's FERNB. SENSOR window ❸ and press ÜBERTRAG ● .
- The programmed data will be loaded in one of the recorder's memories (1 – 8), the vacant one of the smallest programme number.
- If all programme memories are full, the recorder's clock will blink and transmission will not take place.

6 Press SCHALTUHR ● .
- Check to see that the TIMER indicator and other items on the recorder's FDP respond correctly. See page 47.

Setting the date, start and stop times, and channel

- It is not possible to set the date, start and stop times unless the date and clock have previously been set.
- Enter the data while the digits are blinking.
- Unless the start time has been properly set, stop time setting is not possible.
- The stop time can be set within 24 hours from the start time.
- Non-applicable numbers (such as January 32, February 30 for dates, 24 or larger for hours, 60 or larger for minutes and 49 or larger for channels) will be rejected when keyed in.

Cancelling the preset data

- The preset programmes can be cancelled. First engage the Timer Set mode for the programme number you wish to cencel and then press the LÖSCHEN button ● or ● .

Checking the programmed data

- Checking and re-programming can be performed anytime, even when the SCHALTUHR button has already been engaged.
- While recording is actually taking place according to one preset programme, all other preset programmes can be checked or re-programmed.
- To disengage the Timer Set mode, press the DISPLAY button ● or ● .

Timer recording operation

- When the preset start time is reached, recording starts.
- After timer recording, the power is switched off. If the tape end is reached during timer recording, the cassette is automatically ejected and the power is switched off.

How to use the cursor keys ● ●

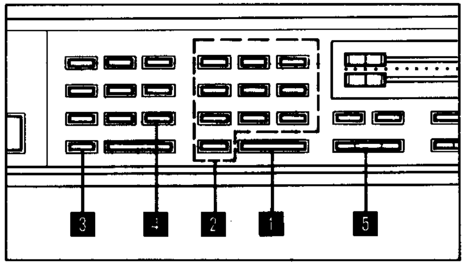
- If you press a wrong key and the flashing position has advanced, press "-" to return to the previous position for correction.
- Once all data have been programmed, you can reach any position for correction using "-" or "+". The flashing position is ready for re-entry.
- The cursor (flashing position) advances or returns in the following order.

Date ⇄ Start time ⇄ Stop time ⇄ Channel

(Pressing AUFZ. NR. engages the check mode in which no position flashes and data correction is not possible. To correct the data, press either cursor key, "+" to move to "Date" or "-" to move to "Channel".)

VPS RECORDING (Use the optional VU-V90E VPS Unit for VPS recording.)

In the VPS (Video Programme System) system, TV stations transmit different VPS codes for different TV programmes, which control the starting and stopping of the video recorder and have precedence over times preset in the timer for accurate recording of a particular programme from start to finish.



Notes:

- When programming the remote control's memory, the VPS indicator will appear on the LCD when VPS command is entered.
- If no VPS code is detected from that station or a system status code which cancels VPS recording is detected, ordinary timer recording will be engaged.
- Operation at the end of VPS recording is the same as with ordinary timer recording.

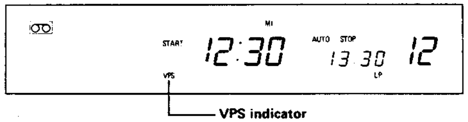
1 Press AUFZ. NR. ● .

2 Set the date, start time, stop time and channel in the same way as for timer programming.

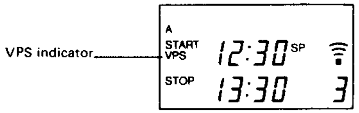
3 Select SP or LP ● .

4 Press VPS/KANAL ● .
- All timer data will be converted to VPS codes and stored in memory.

5 Press SCHALTUHR ● .
- The recorder will enter the VPS standby mode at 20:00 on the day previous to the preset day and remain engaged until 3:59 on the following day, if the intended programme has not yet been broadcast.
- When a VPS code corresponding to the intended TV programme is detected during the VPS standby mode, recording will start. When the VPS code changes to another, recording will stop.
- When an interruption code is detected during VPS recording, the VPS standby mode is engaged and recording restarts when the regular VPS code is restored.



VPS indicator
Illuminated : VPS standby mode (in program mode)
: VPS broadcast received
Blinking : VPS recording progress



AUDIO DUBBING

1 Switch on the TV receiver.
- Adjust the TV receiver's channel to your video channel.

2 Load a pre-recorded cassette. Power will be switched on automatically.

3 Connect a microphone or an audio source to the MIKROFON jack 9 or the AUDIO/VIDEO socket ● respectively.
- With both microphone and audio source connected, mixed sound is recorded.

4 Press "0" of the numeric keys ● .
- If you record sound only from the microphone, the source equipment connected to the AUDIO/VIDEO socket should be off.

5 Press WIEDERGABE ● to start playback and then press RÜCKLAUF or VORLAUF ● to search for the point from which you wish to start audio dubbing.

6 Press PAUSE/STANDB. ● at the start point of audio dubbing.

7 Press PAUSE/STANDB. while holding VERTONUNG ● depressed.

8 Press WIEDERGABE.
- Audio dubbing will start.

Audio dubbing means recording a new soundtrack on a pre-recorded tape. In other words, the previously recorded sound is erased and replaced with a new soundtrack. **Audio dubbing is applicable only to the longitudinal audio track (normal audio).** Therefore, a dubbed narration can be heard together with the original hi-fi sound.

Notes:

- It is recommended that you use a lower-impedance microphone.
- If whistling or howling is heard during audio dubbing, reduce the TV volume or move the microphone farther away from the TV. Recording is being performed even if sound is not heard from the TV receiver. If you want to monitor the sound being recorded, connect headphones to the KOPFHÖRER jack.
- When a microphone is connected to the MIKROFON jack, set the AUDIO-BEGRENZER switch to the EIN position.

CAUTION:
Audio dubbing is not possible with an audio source connected to the rear panel AUDIO EING. connectors.

RECORDING FROM AN EXTERNAL SOURCE

By connecting an external video source (such as a VideoMovie camera-recorder, 2nd video recorder, video camera, etc.) to the AUDIO/VIDEO socket, recording and/or editing are possible.

- For connection of these units, an appropriate cable is necessary.
- For connection of a video camera, a camera adapter is also necessary. Connect the camera adapter's PAUSE terminal to the recorder's PAUSE FERNBEDIENUNG connector ● then you can control taping start/stop with the camera's start/stop switch. For proper connection of a camera, consult a JVC dealer.

1. Turn the power on for all connected equipment.
2. Adjust the TV receiver to your video channel.
3. Load a cassette.
4. Press either TV PR. button ● or the numeric key 0/AUX ● to obtain "AU" in the channel display.
5. Press SP/LP ● for required mode.
6. Operate the source equipment properly.
7. Press AUFNAHME ● and WIEDERGABE/x2 ● simultaneously.
   - When recording with a camera, press AUFNAHME and PAUSE/STANDB. ● to enter the Recording Standby mode, then control taping start/stop will the camera's start/stop switch.
8. To stop recording temporarily, press PAUSE/STANDB.
9. To end recording, press STOP ● .

Note:

- For the operation of the source equipment, refer to the instruction manual of the relevant machine.

IN CASE OF DIFFICUTLY

What may initially appear to be trouble is not always a real problem. Make sure first . . . .

POWER AND TAPE TRANSPORT PROBLEMS

Symptoms	Check points
No power is applied to the recorder.	● Is the power cord disconnected? – Connect it.
Clock is functioning properly, but the recorder cannot be powered.	● Is the TIMER indicator lit on the FDP? – Press SCHALTUHR to disengage the Timer Recording Standby mode.
Tape does not run during recording.	● Is the PAUSE/STANDB. button engaged? – Press the WIEDERGABE/x2 button.
Tape stops in the Rewind or Fast Forward mode.	● Is the ZÄHLWERKSPEICHER switch set to EIN? – Set it to AUS.
Tape will not rewind or fast forward.	● Is the tape already fully rewound or fast forwarded? – Check the cassette.

RECORDING PROBLEMS

Symptoms	Check points
Recording cannot be started.	● Is a cassette loaded? ● Is the safety tab on the cassette removed? – Reseal the slot with cellophane tape.
Camera recording is not possible.	● Are the camera and the camera adapter correctly connected? ● Is the power switch of the camera adapter set to ON? ● Does the channel display indicate "AU"? – Press "0/AUX".
Simulcast recording is not possible.	● Is the AUFNAHMEWAHL switch set to TUNER? – Set it to SIMUL. ● Is an audio source correctly connected to the AUDIO EING. connectors? – Check connections.
Timer recording is not possible.	● Have you set the clock correctly and programmed the timer correctly? – Check once again. ● Is the TIMER indicator lit on the FDP? – Press SCHALTUHR.

PLAYBACK PROBLEMS

Symptoms	Check points
Playback picture does not appear while the tape is running.	● Is the TV receiver's channel selector set to the correct video channel? – Set it to the RF converter channel. (See page 34.)
Noise appear during playback.	● Press SPURLAGE buttons.
Playback picture is blurred or interrupted while TV broadcasts are clear.	● Video heads may be dirty. – Head cleaning is necessary. Consult your nearest JVC dealer.

HI-FI AUDIO PROBLEMS

Symptoms	Check points
TV sound cannot be recorded on hi-fi audio track.	● Is the AUFNAHMEWAHL switch set to SIMUL? – Set it to TUNER.
Breaks are noticeable in hi-fi audio reproduction.	● Press the SPURLAGE buttons. (See page 38.) ● Have you adjusted the recording level correctly? – Over-level recordings could be a cause. Adjust the level correctly next time. See page 38.
Soundtrack on the hi-fi audio track cannot be reproduced.	● Does the NORMAL indicator light? – Press the AUDIO MONITOR button to Hi-Fi STEREO (or L or R as required).
Audio level indicators do not function.	● Is the PEGELANZEIGE switch set to a position other than EIN? – Set it to EIN.

OTHERS

Symptoms	Check points
Whistling or howling is heard from TV.	● Move camera or microphone away from TV or reduce TV sound volume.
Some channels are skipped over when selecting a channel.	● Those channels are preset to be skipped over. If you need them, restore them. (See page 36.)
Channel cannot be switched.	● Is recording in progress? – Press the PAUSE/STANDB., select a desired channel and press the WIEDERGABE/x2.

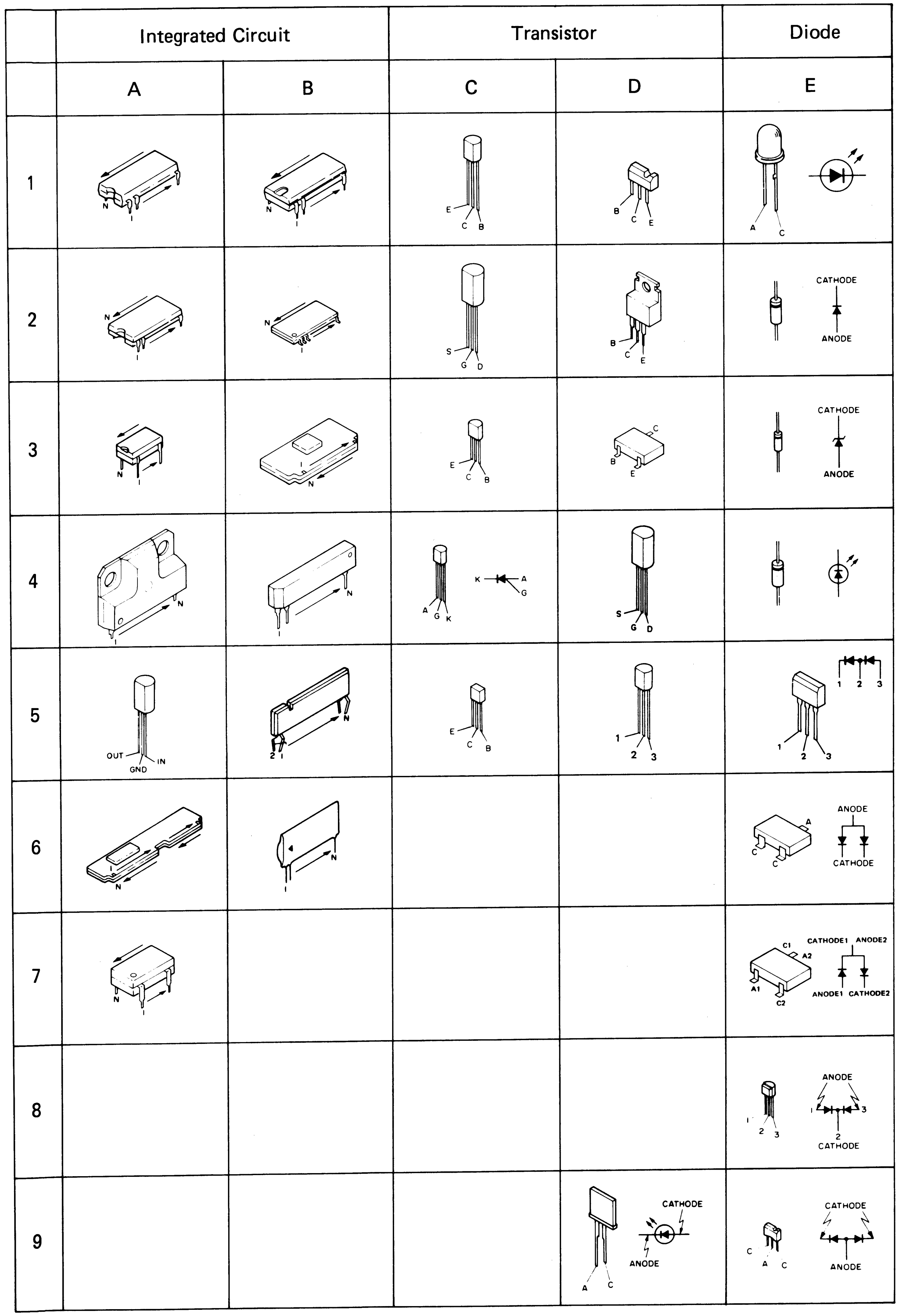
This recorder contains microcomputers. External electronic noise or interference could cause malfunctioning. In such cases, switch the power off and unplug the power cord. Then plug it in again and switch on. Take out the cassette. After checking the cassette, operate the unit as usual.

HEAD CLEANING

- Picture playback may become blurred or interrupted while the TV programme received is clear. This does not mean that the recorded programme has been erased.
- Dirt accumulated on the video heads after long periods of use causes such problems. In this case, head cleaning requiring highly technical care is necessary.

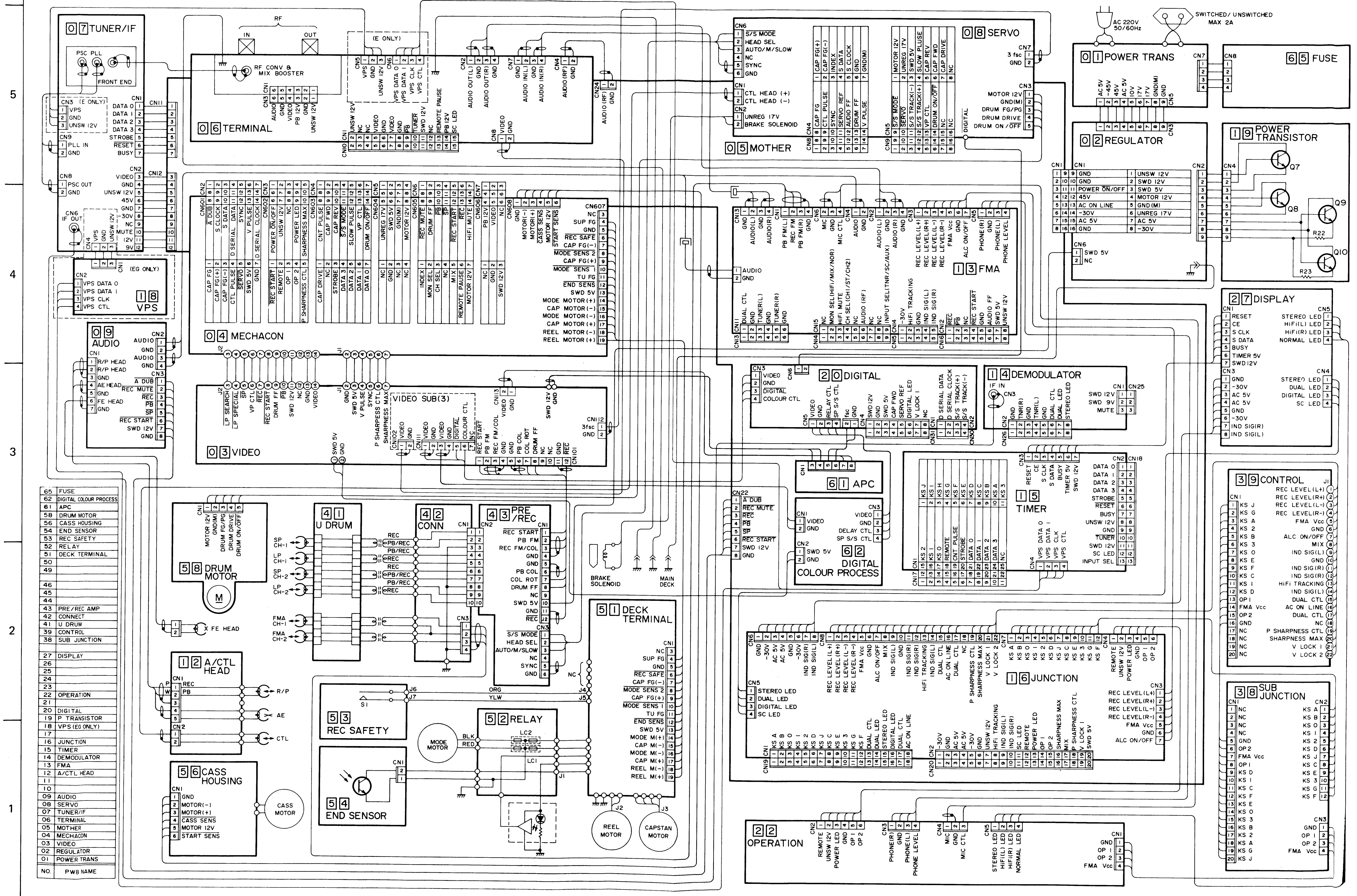
For head cleaning, consult the nearest JVC dealer.

3.4 MAIN TYPES OF ACTIVE AND PACKAGE CIRCUITS



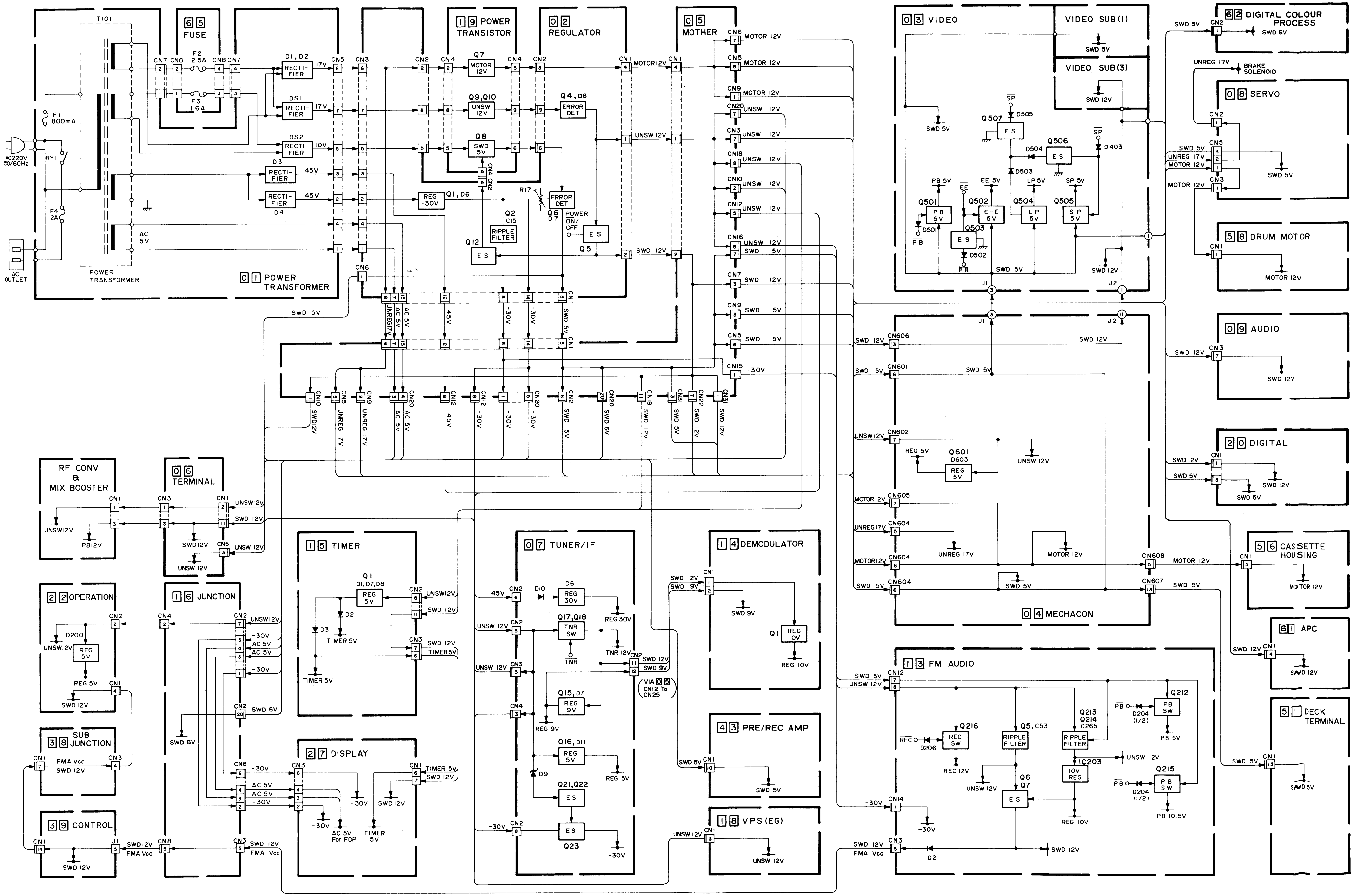
	NAME	L
A	AN3926K	1A
	AN6299NK	1A
	AN6308	3A
	AN6392	4B
	AN3994NK	1A
	AN3592K	1A
B	BA7001	4B
	BA7021	4B
	BA3707	1B
	BA7751ALS	5B
	BU2767S	1B
	BA6222	4B
	BU4030B	1B
	BU4030BF	1B
	BX6325	6B
	BA6259N	1B
	BA618	
G	GPIU501	
H	HA11752	1A
	HA118019NT	1B
	H8DN1916A	4B
	H8DN1917A	4B
	HD49712ANT	1A
	HD49703NT	1A
I	IC-PST523H-2	5A
	M50253P	
	M5218P	3A
	M5278L05	5A
	M50440-397SP	1A
	M50731-621SP	1B
	M51365SP	1A
	M58655P	1A
	M51458P	1A
	M51647SP	1A
	M51722P	2A
	M50965-633SP	1A
	M54647L	4B
	M5M21C67P-55	1A
	MB40176	1A
	MN3106	3A
	MN3801	1A
	MN4081BS	2B
	MSC1124BRS	1B
	MSM6989RS	1B
	M5201L	4B
	M5278L10	5A
N	NJM2207S	5B
P	PB20008A	6A
	PU22198-2A	3B
	PU22280B-02	6A
	PU22517B-02	3B
	PU22046A	6A
	PU22282B	6A
S	S-8053ALB	5D
T	TA78L010AP	5A
	TA8400P	1A
	TA8662N	1A
	TD6710AN	1A
	TA7374P	6B
	TDA3800GS	6B
U	UPC319C	1B
	UPC1480CA	1B
	UPC1481CA	1B
	UPC324G2	2B
	UPD1709CT-743	1A
	UPD4066BG	2B
	UPD4069UBG	2B
	UPD7538ACU-214	1A
	UPD75216ACW-037	1A
U	UPD82C43CY	1A
	UPD41221C-70	2A
	UPD74HC02C	
	UPD74HC02G	
V	VC2022C	1A
	VC2030	1A
	VC2031DP	1B
	VC2034	6B
	VC2050	1B
	VC2052	1B
7	7VT12	6B
D	DTA114EF	5C
	DTA114ES	5C
	DTA124EF	1D
	DTA124EK	3D
	DTA124ES	5C
	DTA143ES	5C
	DTA144EF	1D
	DTA144ES	5C
	DTA144WF	1D
	DTC114ES	5C
	DTC124ES	5C
	DTC144EF	5C
	DTC144EK	3D
	DTC144ES	5C
	DTC144WS	5C
	DTC144WK	
2SA	2SA854	5C
	2SA933	5C
	2SA937	1D
	2SA1020	1C
	2SA1037	3D
	2SA1309	5C
2SB	2SB641	1D
	2SB643	1D
	2SB644	1D
	2SB810	5C
	2SB851	
	2SB1015	2D
	2SB808	5C
2SC	2SC1317	3C
	2SC1740	5C
	2SC1741	5C
	2SC2021	1D
	2SC2412	3D
	2SC2636	1D
	2SC2655	1C
	2SC2878	5C
	2SC3070	1C
	2SC3243	1C
	2SC3311	5C
	2SC3354	1D
	2SC3313	5C
	2SC3327	1C
2SD	2SD636	1D
	2SD637	1D
	2SD638	1D
	2SD1266	2D
	2SD1383	3D
	2SD1423	5C
	2SD1450	5C
	2SD1469	5C
	2SD1740-01	2D
	2SD1761	2D
	2SD1449	
	2SD1468	
	2SD1292	1C
	2SD1785	
2SK	2SK301	4D
	2SK381	2C
	2SK656	5C
P	PN268R-NC	
T	TN41A	4C
U	UN4119	5C
D	DA204K	7E
	DA203	9E
	DA210S	5E
	DAN201	5E
	DAN202K	2E
	DAN209S	8E
	DAP202K	6E
	DS5B10	
E	E-452-2	3E
H	HZ4A2	3E
	HZ6C2	3E
	HZ12C1	3E
	HZ30-2	3E
	HZS5.1EB2	3E
	HZS5.6EB1	3E
	HZS6.8EB2	3E
	HZS7.5EB2	3E
	HZS4.3EB2	3E
L	LTZ-MR15	4E
M	MA27T(A)	2E
	MA27W(B)	
	MA29W(A)	
	MA150	2E
	MA165	2E
	MTZ4.7B	3E
	MTZ5.1B	3E
	MTZ13A	3E
	MTZ10B	
	MTZJ5.1B	3E
R	RD3.0ESB2	3E
	RD5.1ES-T1B2	3E
	RD5.6ES-T1B3	3E
	RD8.2EB1	3E
	RD10ESB3	3E
	RD11ES-T1B3	3E
	RD24ESB2	3E
	RD9.1ESB2	3E
S	SLH-34MC3F	1E
	SLH-34VC3F	1E
	SLH-34YC3F	1E
	SLV-34MC3F	
	S5688G	2E
O	OA90	2E
1	10E2	2E
	11E2	2E
	1SR35-200A	2E
	1SS99	2E
	1SS132	2E
	1SS133	2E
	11ES2	2E

3.5 BOARD INTERCONNECTIONS


07 TUNER/IF
PSC PLL
FRONT END
06 TERMINAL
RF
IN
OUT
RF CONV & MIX BOOSTER
(E ONLY)
08 SERVO
05 MOTHER
01 POWER TRANS
AC 220V 50/60Hz
SWITCHED/UNSWITCHED MAX 2A
65 FUSE
02 REGULATOR
19 POWER TRANSISTOR
Q7
Q8
Q9
Q10
R22
R23
18 VPS
(EG ONLY)
04 MECHACON
13 FMA
09 AUDIO
03 VIDEO
VIDEO SUB(3)
20 DIGITAL
14 DEMODULATOR
27 DISPLAY
61 APC
62 DIGITAL COLOUR PROCESS
15 TIMER
39 CONTROL
58 DRUM MOTOR
41 U DRUM
42 CONN
43 PRE/REC
BRAKE SOLENOID
MAIN DECK
X FE HEAD
12 A/CTL HEAD
R/P
AE
CTL
51 DECK TERMINAL
53 REC SAFETY
S1
52 RELAY
MODE MOTOR
LC1
LC2
54 END SENSOR
56 CASS HOUSING
CASS MOTOR
REEL MOTOR
CAPSTAN MOTOR
16 JUNCTION
38 SUB JUNCTION
22 OPERATION

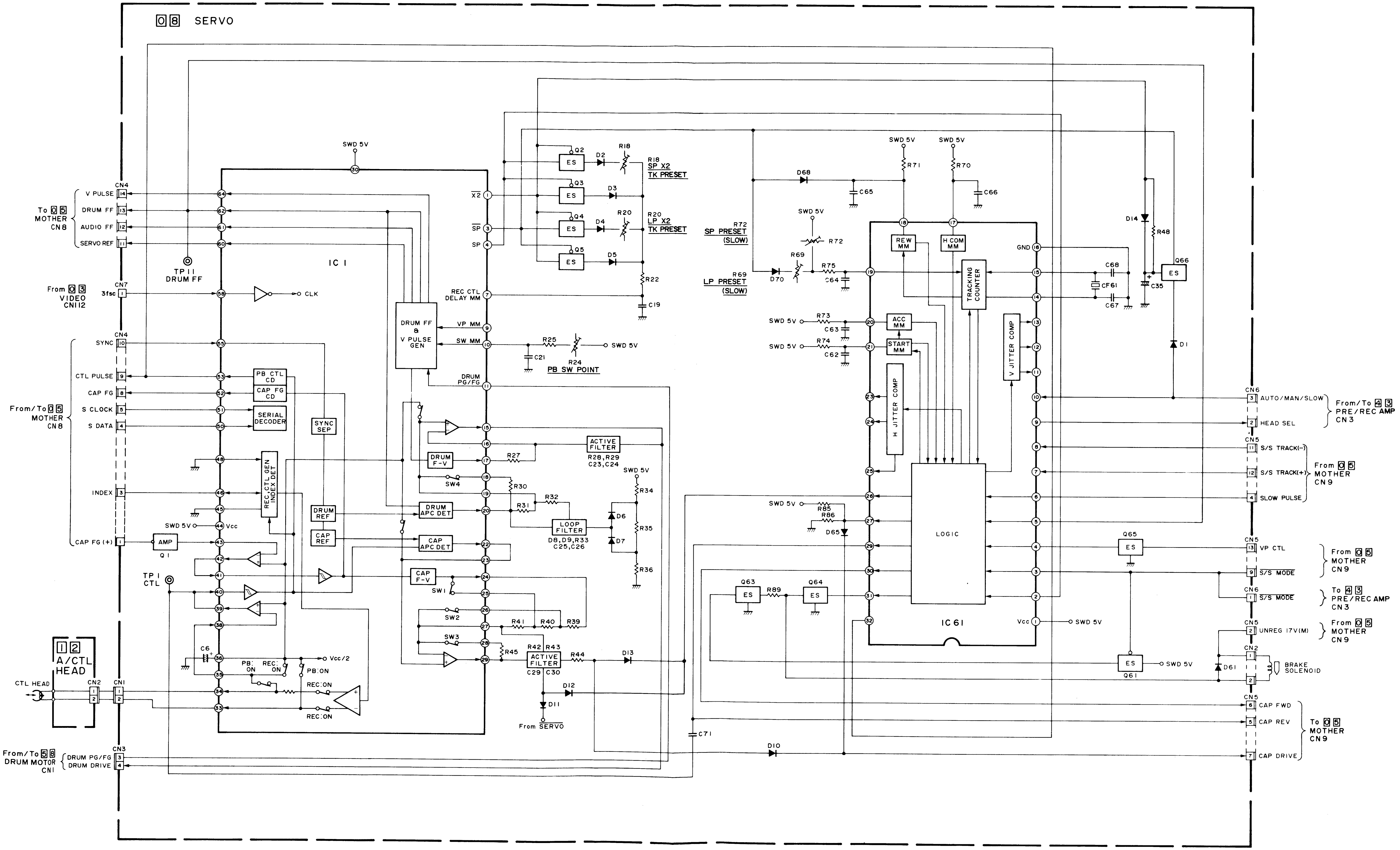
NO.	PWB NAME
65	FUSE
62	DIGITAL COLOUR PROCESS
61	APC
58	DRUM MOTOR
56	CASS HOUSING
54	END SENSOR
53	REC SAFETY
52	RELAY
51	DECK TERMINAL
50	
49	
46	
45	
44	
43	PRE/REC AMP
42	CONNECT
41	U DRUM
39	CONTROL
38	SUB JUNCTION
27	DISPLAY
26	
25	
24	
23	
22	OPERATION
21	
20	DIGITAL
19	P TRANSISTOR
18	VPS (EG ONLY)
17	
16	JUNCTION
15	TIMER
14	DEMODULATOR
13	FMA
12	A/CTL HEAD
11	
10	
09	AUDIO
08	SERVO
07	TUNER/IF
06	TERMINAL
05	MOTHER
04	MECHACON
03	VIDEO
02	REGULATOR
01	POWER TRANS

3.6 POWER SYSTEM BLOCK DIAGRAM



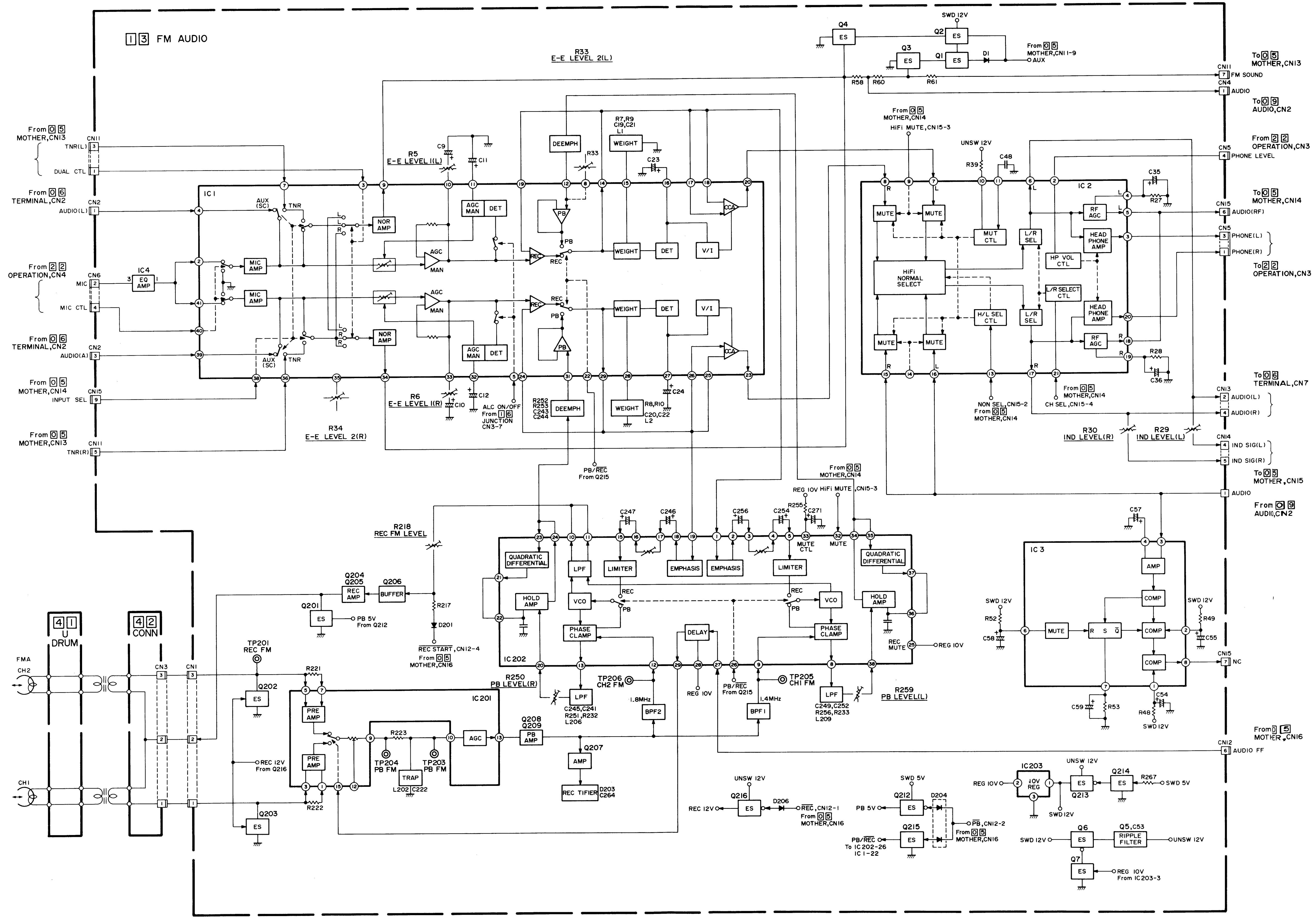
T101
POWER TRANSFORMER
AC220V 50/60Hz
AC OUTLET
F1 800mA
F4 2A
RY1
65 FUSE
F2 2.5A
F3 1.6A
01 POWER TRANSFORMER
D1, D2 RECTI-FIER
DS1 RECTI-FIER
DS2 RECTI-FIER
D3 RECTI-FIER
D4 RECTI-FIER
19 POWER TRANSISTOR
Q7 MOTOR 12V
Q9,Q10 UNSW 12V
Q8 SWD 5V
Q1, D6 REG -30V
Q2 C15 RIPPLE FILTER
Q12 ES
02 REGULATOR
Q4, D8 ERROR DET
R17
Q6 D7 ERROR DET
POWER ON/OFF
Q5 ES
05 MOTHER
03 VIDEO
VIDEO SUB(1)
VIDEO SUB(3)
Q507 ES
Q506 ES
Q501 PB 5V
Q502 E-E 5V
Q503 ES
Q504 LP 5V
Q505 SP 5V
62 DIGITAL COLOUR PROCESS
BRAKE SOLENOID
08 SERVO
58 DRUM MOTOR
09 AUDIO
20 DIGITAL
56 CASSETTE HOUSING
61 APC
51 DECK TERMINAL
04 MECHACON
Q601 D603 REG 5V
13 FM AUDIO
Q216 REC SW
Q5, C53 RIPPLE FILTER
Q213 Q214 C265 RIPPLE FILTER
IC203 10V REG
Q6 Q7 ES
Q212 PB SW
Q215 PB SW
RF CONV & MIX BOOSTER
06 TERMINAL
22 OPERATION
D200 REG 5V
16 JUNCTION
38 SUB JUNCTION
39 CONTROL
15 TIMER
Q1 D1, D7, D8 REG 5V
27 DISPLAY
07 TUNER/IF
D6 REG 30V
Q17,Q18 TNR SW
Q15, D7 REG 9V
Q16, D11 REG 5V
Q21,Q22 ES
Q23 ES
VIA 05 CN12 To CN25
14 DEMODULATOR
Q1 REG 10V
43 PRE/REC AMP
18 VPS (EG)

3.7 SERVO BLOCK DIAGRAM

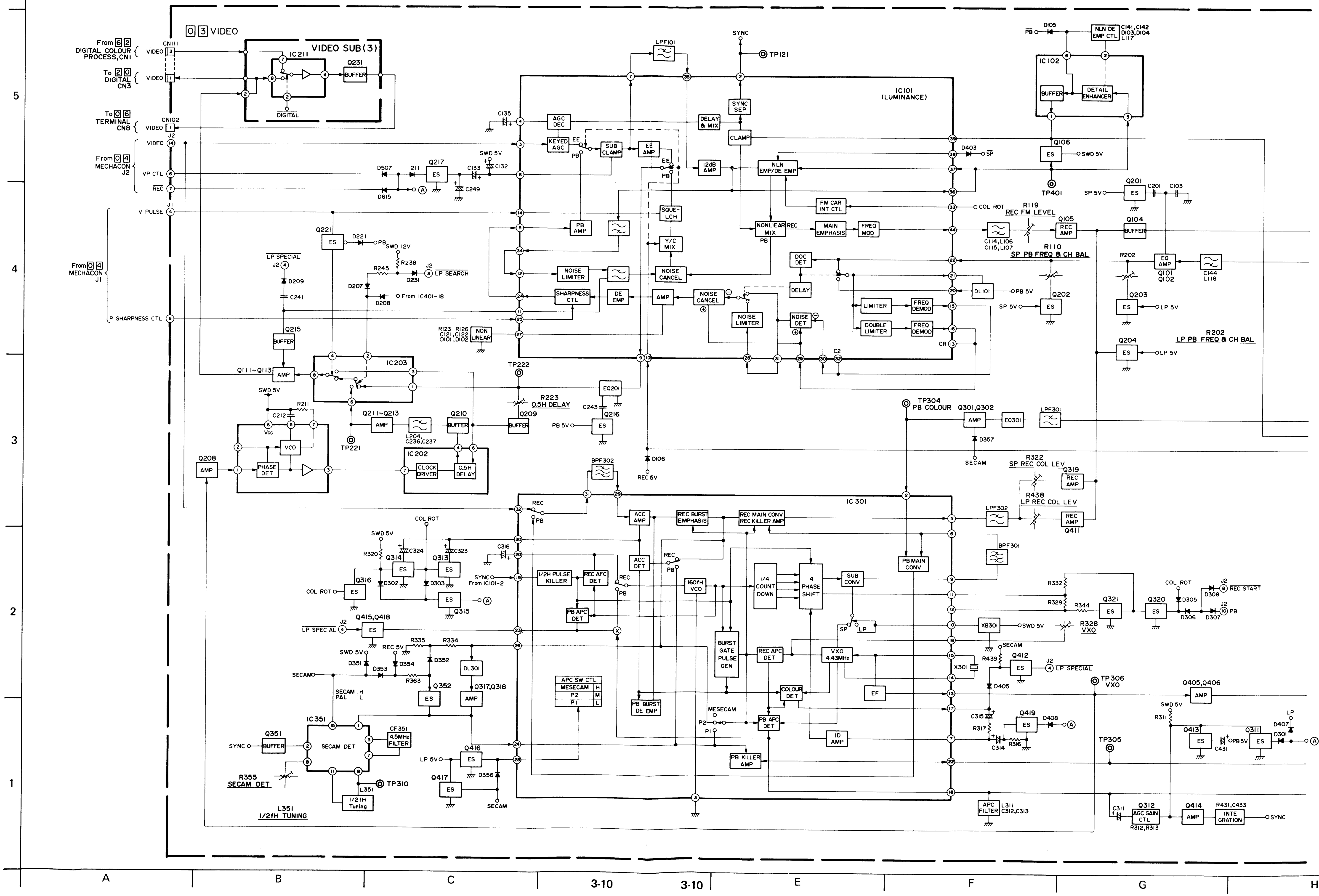


08 SERVO
IC 1
IC 61
To 05 MOTHER CN8
V PULSE
DRUM FF
AUDIO FF
SERVO REF
CN4
TP 11 DRUM FF
From 03 VIDEO CN112
CN7
3fsc
CLK
SYNC
CTL PULSE
CAP FG
S CLOCK
S DATA
INDEX
CAP FG (+)
From/To 05 MOTHER CN8
SWD 5V
Vcc
AMP
Q1
TP1 CTL
12 A/CTL HEAD
CTL HEAD
CN2
CN1
From/To 58 DRUM MOTOR CN1
CN3
DRUM PG/FG
DRUM DRIVE
PB CTL CD
CAP FG CD
SERIAL DECODER
SYNC SEP
REC CTL GEN INDEX DET
DRUM REF
CAP REF
DRUM FF & V PULSE GEN
DRUM F-V
SW4
DRUM APC DET
CAP APC DET
CAP F-V
SW1
SW2
SW3
C6
PB: ON
REC: ON
PB:ON
REC:ON
Vcc/2
X2
SP
REC CTL DELAY MM
VP MM
SW MM
DRUM PG/FG
Q2
Q3
Q4
Q5
ES
D2
D3
D4
D5
R18
R18 SP X2 TK PRESET
R20
R20 LP X2 TK PRESET
R22
C19
R25
R24 PB SW POINT
C21
R27
ACTIVE FILTER
R28, R29 C23, C24
R30
R31
R32
LOOP FILTER
D8, D9, R33 C25, C26
R34
R35
R36
D6
D7
R39
R40
R41
R42 R43
R45
ACTIVE FILTER
C29 C30
R44
D13
D12
D11
From SERVO
C71
D10
D68
C65
SWD 5V
R71
R70
C66
R72 SP PRESET (SLOW)
R69 LP PRESET (SLOW)
R72
R69
D70
R75
C64
REW MM
H COM MM
TRACKING COUNTER
GND
C68
CF61
C67
C35
D14
R48
Q66
D1
R73
C63
R74
C62
ACC MM
START MM
V JITTER COMP
H JITTER COMP
LOGIC
R85
R86
D65
Q63
R89
Q64
Q65
Q61
SWD 5V
D61
CN6
AUTO/MAN/SLOW
HEAD SEL
From/To 43 PRE/REC AMP CN3
CN5
S/S TRACK(-)
S/S TRACK(+)
SLOW PULSE
From 05 MOTHER CN9
VP CTL
S/S MODE
From 05 MOTHER CN9
S/S MODE
To 43 PRE/REC AMP CN3
UNREG 17V(M)
From 05 MOTHER CN9
CN2
BRAKE SOLENOID
CAP FWD
CAP REV
CAP DRIVE
To 05 MOTHER CN9

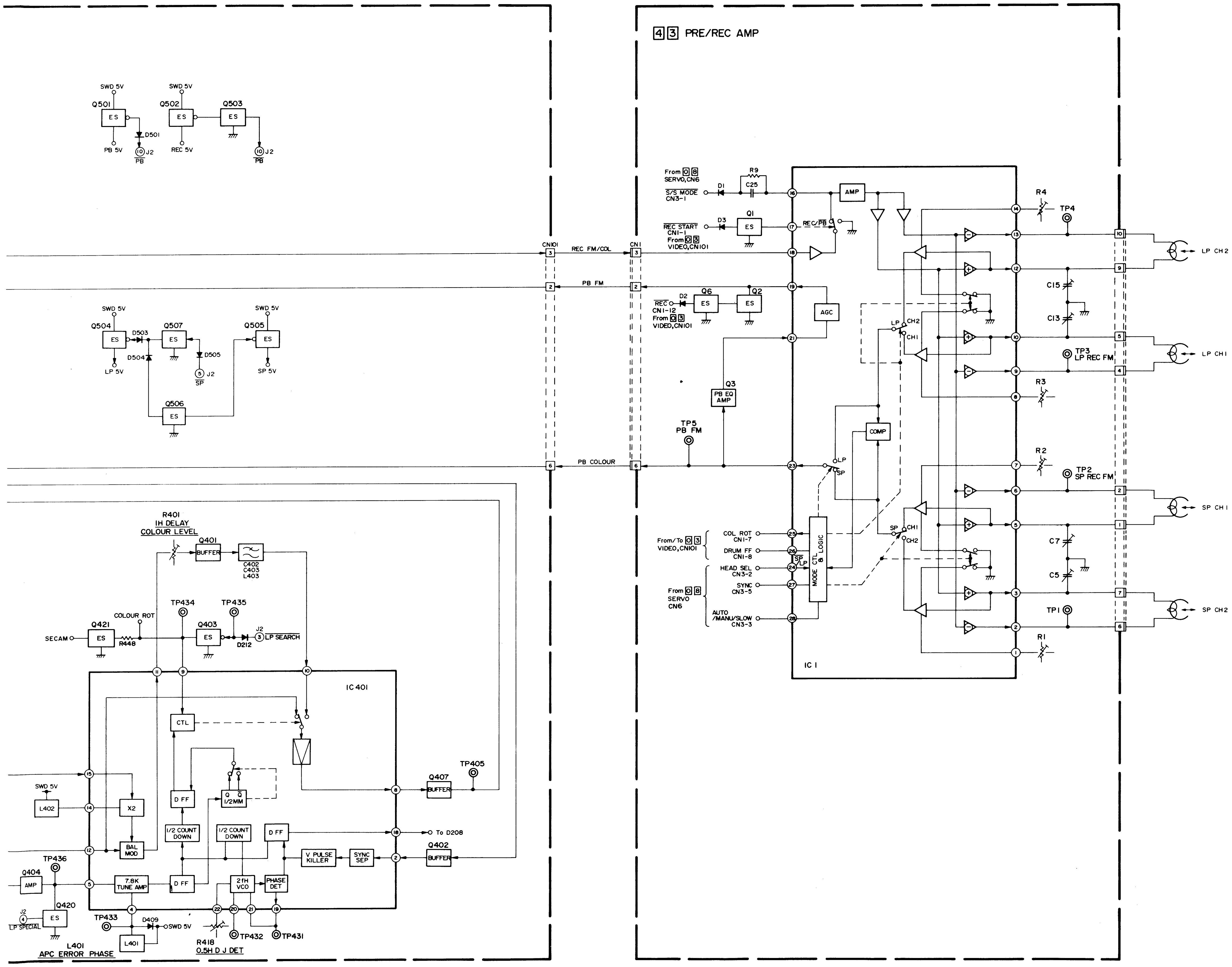
3.8 FM AUDIO BLOCK DIAGRAM


13 FM AUDIO
R33 E-E LEVEL 2(L)
R5 E-E LEVEL 1(L)
R6 E-E LEVEL 1(R)
R34 E-E LEVEL 2(R)
From 05 MOTHER,CN13
TNR(L)
DUAL CTL
From 06 TERMINAL,CN2
AUDIO(L)
From 22 OPERATION,CN4
MIC
MIC CTL
From 06 TERMINAL,CN2
AUDIO(A)
From 05 MOTHER,CN14
INPUT SEL
From 05 MOTHER,CN13
TNR(R)
IC1
IC4
EQ AMP
MIC AMP
NOR AMP
AGC
MAN
AGC MAN
DET
AUX (SC)
TNR
REC
PB
DEEMPH
WEIGHT
V/I
CCA
R7,R9 C19,C21 L1
R8,R10 C20,C22 L2
R252 R253 C243 C244
ALC ON/OFF From 16 JUNCTION CN3-7
PB/REC From Q215
Q4
Q2
Q3
Q1
D1
ES
SWD 12V
From 05 MOTHER,CN11-9 AUX
R58
R60
R61
To 05 MOTHER,CN13
FM SOUND
AUDIO
To 09 AUDIO,CN2
From 22 OPERATION,CN3
PHONE LEVEL
To 05 MOTHER,CN14
AUDIO(RF)
PHONE(L)
PHONE(R)
To 22 OPERATION,CN3
From 05 MOTHER,CN14 HiFi MUTE,CN15-3
UNSW 12V
R39
C48
IC2
MUTE
MUT CTL
L/R SEL
HiFi NORMAL SELECT
HP VOL CTL
L/R SELECT CTL
H/L SEL CTL
RF AGC
HEAD PHONE AMP
C35
R27
R28
C36
NON SEL,CN15-2 From 05 MOTHER,CN14
From 05 MOTHER,CN14 CH SEL,CN15-4
To 06 TERMINAL,CN7
AUDIO(L)
AUDIO(R)
R30 IND LEVEL(R)
R29 IND LEVEL(L)
IND SIG(L)
IND SIG(R)
To 05 MOTHER,CN15
From 09 AUDIO,CN2
From 05 MOTHER,CN14
REG 10V HiFi MUTE,CN15-3
R218 REC FM LEVEL
R217
D201
REC START,CN12-4 From 05 MOTHER,CN16
Q204 Q205
Q206
REC AMP
BUFFER
Q201
PB 5V From Q212
IC202
QUADRATIC DIFFERENTIAL
HOLD AMP
LPF
VCO
PHASE CLAMP
LIMITER
EMPHASIS
DELAY
MUTE CTL
REC MUTE
REG 10V
BPF1
BPF2
1.8MHz
1.4MHz
R250 PB LEVEL(R)
R259 PB LEVEL(L)
TP206 CH2 FM
TP205 CH1 FM
C245,C241 R251,R232 L206
C249,C252 R256,R233 L209
41 U DRUM
42 CONN
FMA
CH2
CH1
CN3
CN1
TP201 REC FM
Q202
Q203
R221
R222
REC 12V From Q216
IC201
PRE AMP
R223
TP204 PB FM
TP203 PB FM
TRAP
L202 C222
AGC
Q208 Q209
PB AMP
Q207
AMP
REC TIFIER
D203 C264
IC3
COMP
R S Q
SWD 12V
R52
C58
R49
C55
C59
R53
R48
C54
C57
NC
From 05 MOTHER,CN16
AUDIO FF
Q216
D206
REC,CN12-1 From 05 MOTHER,CN16
Q212
Q215
D204
PB 5V
PB/REC To IC202-26 IC1-22
PB,CN12-2 From 05 MOTHER,CN16
IC203
10V REG
SWD 12V
Q214
Q213
R267
SWD 5V
Q6
Q5,C53
RIPPLE FILTER
Q7
REG 10V From IC203-3

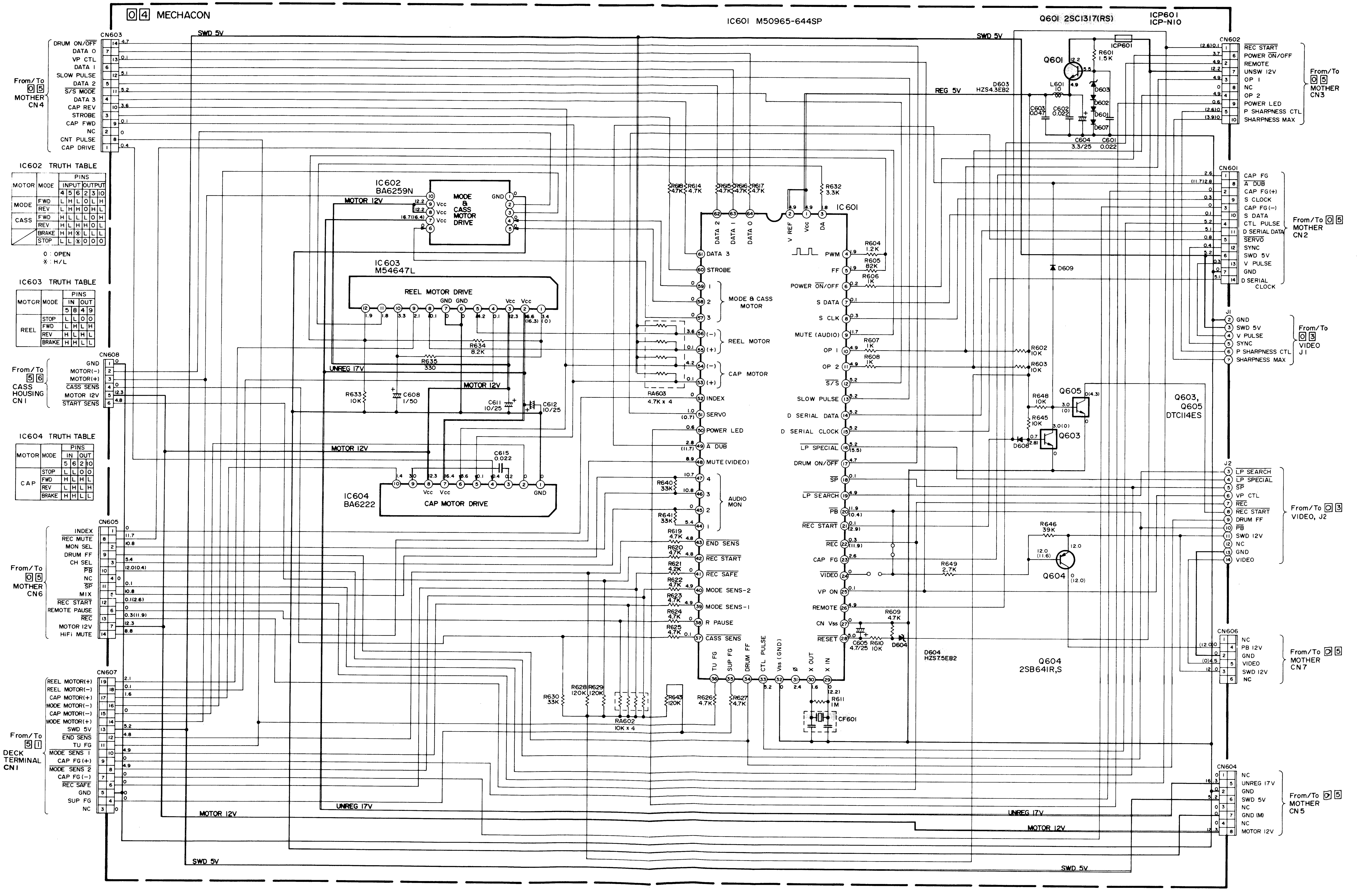
3.9 VIDEO BLOCK DIAGRAM



6
5
4
3
2
1
A
B
C
D
E
F
G
H
03 VIDEO
VIDEO SUB (3)
From 62 DIGITAL COLOUR PROCESS, CN1
To 20 DIGITAL CN3
To 06 TERMINAL CN8
From 04 MECHACON J2
From 04 MECHACON J1
CN111
CN102
VIDEO
VP CTL
REC
V PULSE
LP SPECIAL
P SHARPNESS CTL
IC211
Q231
BUFFER
DIGITAL
IC101 (LUMINANCE)
SYNC
TP121
LPF101
SYNC SEP
DELAY & MIX
CLAMP
AGC DEC
KEYED AGC
SUB CLAMP
EE AMP
12dB AMP
NLN EMP/DE EMP
FM CAR INT CTL
SQUE-LCH
Y/C MIX
NONLIEAR MIX
MAIN EMPHASIS
FREQ MOD
PB AMP
NOISE LIMITER
NOISE CANCEL
SHARPNESS CTL
DE EMP
AMP
DOC DET
DELAY
LIMITER
DOUBLE LIMITER
FREQ DEMOD
DL101
NON LINEAR
IC102
NLN DE EMP CTL
BUFFER
DETAIL ENHANCER
Q106
ES
TP401
SWD 5V
Q201
Q104
Q105
REC AMP
R119 REC FM LEVEL
R110 SP PB FREQ & CH BAL
R202 LP PB FREQ & CH BAL
EQ AMP
Q101, Q102
Q202
Q203
Q204
SP 5V
LP 5V
PB 5V
COL ROT
Q217
Q221
Q215
Q111~Q113
IC203
Q208
PHASE DET
VCO
Q211~Q213
Q210
Q209
TP221
TP222
R223 0.5H DELAY
IC202
CLOCK DRIVER
0.5H DELAY
EQ201
Q216
BPF302
D106
REC 5V
TP304 PB COLOUR
Q301, Q302
EQ301
LPF301
SECAM
R322 SP REC COL LEV
Q319
R438 LP REC COL LEV
Q411
LPF302
BPF301
IC301
ACC AMP
REC BURST EMPHASIS
REC MAIN CONV REC KILLER AMP
ACC DET
1/2H PULSE KILLER
REC AFC DET
PB APC DET
160fH VCO
1/4 COUNT DOWN
4 PHASE SHIFT
SUB CONV
PB MAIN CONV
BURST GATE PULSE GEN
REC APC DET
VXO 4.43MHz
EF
COLOUR DET
PB BURST DE EMP
PB APC DET
ID AMP
PB KILLER AMP
APC SW CTL
MESECAM H
P2 M
P1 L
Q314
Q313
Q316
Q315
Q415, Q418
Q352
DL301
Q317, Q318
SECAM : H
PAL : L
IC351
SECAM DET
CF351 4.5MHz FILTER
Q351
R355 SECAM DET
L351 1/2fH TUNING
1/2fH Tuning
TP310
Q416
Q417
XB301
X301
R328 VXO
Q321
Q320
Q412
Q419
TP306 VXO
TP305
Q405, Q406
Q413
Q311
Q312
AGC GAIN CTL
Q414
INTE GRATION
R431, C433
REC START
APC FILTER
L311 C312, C313


4 3 PRE/REC AMP
SWD 5V
Q501
ES
D501
PB 5V
10 J2
PB
Q502
REC 5V
Q503
Q504
D503
Q507
Q505
D504
D505
5 J2
SP
LP 5V
SP 5V
Q506
CN101
REC FM/COL
PB FM
PB COLOUR
CN1
R401
1H DELAY
COLOUR LEVEL
Q401
BUFFER
C402
C403
L403
TP434
TP435
COLOUR ROT
Q421
SECAM
R448
Q403
D212
J2
3 LP SEARCH
IC401
CTL
D FF
1/2MM
Q
X2
L402
BAL MOD
1/2 COUNT DOWN
V PULSE KILLER
SYNC SEP
Q402
BUFFER
Q407
TP405
To D208
TP436
Q404
AMP
7.8K TUNE AMP
2fH VCO
PHASE DET
Q420
J2
4 LP SPECIAL
TP433
D409
SWD 5V
L401
R418
0.5H D J DET
TP432
TP431
L401
APC ERROR PHASE
From 0 8
SERVO,CN6
S/S MODE
CN3-1
D1
R9
C25
AMP
D3
Q1
REC START
CN1-1
From 0 3
VIDEO,CN101
REC/PB
REC
CN1-12
From 0 3
VIDEO,CN101
D2
Q6
Q2
AGC
Q3
PB EQ AMP
TP5
PB FM
COMP
LP
SP
CH1
CH2
From/To 0 3
VIDEO,CN101
COL ROT
CN1-7
DRUM FF
CN1-8
HEAD SEL
CN3-2
SYNC
CN3-5
From 0 8
SERVO
CN6
AUTO
/MANU/SLOW
CN3-3
MODE CTL & LOGIC
SP
LP
IC 1
R4
TP4
C15
C13
TP3
LP REC FM
R3
R2
TP2
SP REC FM
C7
C5
TP1
R1
LP CH2
LP CH1
SP CH1
SP CH2

3.10 MECHANISM CONTROL SCHEMATIC DIAGRAM



04 MECHACON
IC601 M50965-644SP
Q601 2SC1317(RS)
ICP601 ICP-N10
IC602 BA6259N
MODE & CASS MOTOR DRIVE
IC603 M54647L
REEL MOTOR DRIVE
IC604 BA6222
CAP MOTOR DRIVE
Q603, Q605 DTC114ES
Q604 2SB641R,S
D603 HZS4.3EB2
D604 HZS7.5EB2
SWD 5V
REG 5V
MOTOR 12V
UNREG 17V
CN603
From/To 05 MOTHER CN4
DRUM ON/OFF
DATA 0
VP CTL
DATA 1
SLOW PULSE
DATA 2
S/S MODE
DATA 3
CAP REV
STROBE
CAP FWD
NC
CNT PULSE
CAP DRIVE
CN608
From/To 56 CASS HOUSING CN1
GND
MOTOR(−)
MOTOR(+)
CASS SENS
MOTOR 12V
START SENS
CN605
From/To 05 MOTHER CN6
INDEX
REC MUTE
MON SEL
DRUM FF
CH SEL
PB
NC
SP
MIX
REC START
REMOTE PAUSE
REC
MOTOR 12V
HiFi MUTE
CN607
From/To 51 DECK TERMINAL CN1
REEL MOTOR(+)
REEL MOTOR(−)
CAP MOTOR(+)
MODE MOTOR(−)
CAP MOTOR(−)
MODE MOTOR(+)
SWD 5V
END SENS
TU FG
MODE SENS 1
CAP FG(+)
MODE SENS 2
CAP FG(−)
REC SAFE
GND
SUP FG
NC
CN602
From/To 05 MOTHER CN3
REC START
POWER ON/OFF
REMOTE
UNSW 12V
OP 1
NC
OP 2
POWER LED
P SHARPNESS CTL
SHARPNESS MAX
CN601
From/To 05 MOTHER CN2
CAP FG
A DUB
CAP FG(+)
S CLOCK
CAP FG(−)
S DATA
CTL PULSE
D SERIAL DATA
SERVO
SYNC
SWD 5V
V PULSE
GND
D SERIAL CLOCK
J1
From/To 03 VIDEO J1
GND
SWD 5V
V PULSE
SYNC
P SHARPNESS CTL
SHARPNESS MAX
J2
From/To 03 VIDEO, J2
LP SEARCH
LP SPECIAL
SP
VP CTL
REC
REC START
DRUM FF
PB
SWD 12V
NC
GND
VIDEO
CN606
From/To 05 MOTHER CN7
NC
PB 12V
GND
VIDEO
SWD 12V
NC
CN604
From/To 05 MOTHER CN5
NC
UNREG 17V
GND
SWD 5V
NC
GND (M)
NC
MOTOR 12V
DATA 3
STROBE
MODE & CASS MOTOR
REEL MOTOR
CAP MOTOR
INDEX
SERVO
POWER LED
A DUB
MUTE (VIDEO)
AUDIO MON
END SENS
REC START
REC SAFE
MODE SENS-2
MODE SENS-1
R PAUSE
CASS SENS
PWM
FF
POWER ON/OFF
S DATA
S CLK
MUTE (AUDIO)
OP 1
OP 2
S/S
SLOW PULSE
D SERIAL DATA
D SERIAL CLOCK
LP SPECIAL
DRUM ON/OFF
SP
LP SEARCH
PB
REC START
REC
CAP FG
VIDEO
VP ON
REMOTE
CN Vss
RESET
TU FG
SUP FG
DRUM FF
CTL PULSE
Vss (GND)
X OUT
X IN
V REF
Vcc
DA
DATA 2
DATA 1
DATA 0
RA603 4.7K x 4
RA602 10K x 4
CF601
R633 10K
C608 1/50
R634 8.2K
R635 330
C611 10/25
C612 10/25
C615 0.022
R601 1.5K
L601 10
C603 0.047
C602 0.022
C604 3.3/25
C601 0.022
D601
D602
D607
D609
D608
R602 10K
R603 10K
R604 1.2K
R605 82K
R606 1K
R607 1K
R608 1K
R609 4.7K
R610 10K
C605 4.7/25
R611 1M
R632 3.3K
R618 4.7K
R614 4.7K
R615 4.7K
R616 4.7K
R617 4.7K
R640 33K
R641 33K
R619 4.7K
R620 4.7K
R621 4.2K
R622 4.7K
R623 4.7K
R624 4.7K
R625 4.7K
R626 4.7K
R627 4.7K
R628 120K
R629 120K
R630 33K
R643 120K
R645 10K
R646 39K
R648 10K
R649 2.7K
Q601
Q603
Q604
Q605

IC602 TRUTH TABLE

MOTOR	MODE	PINS					
		INPUT			OUTPUT		
		4	5	6	2	3	10
MODE	FWD	L	H	L	O	L	H
	REV	L	H	H	O	H	L
CASS	FWD	H	L	L	L	O	H
	REV	H	L	H	H	O	L
	BRAKE	H	H	X	L	L	L
	STOP	L	L	X	O	O	O

O : OPEN
X : H/L

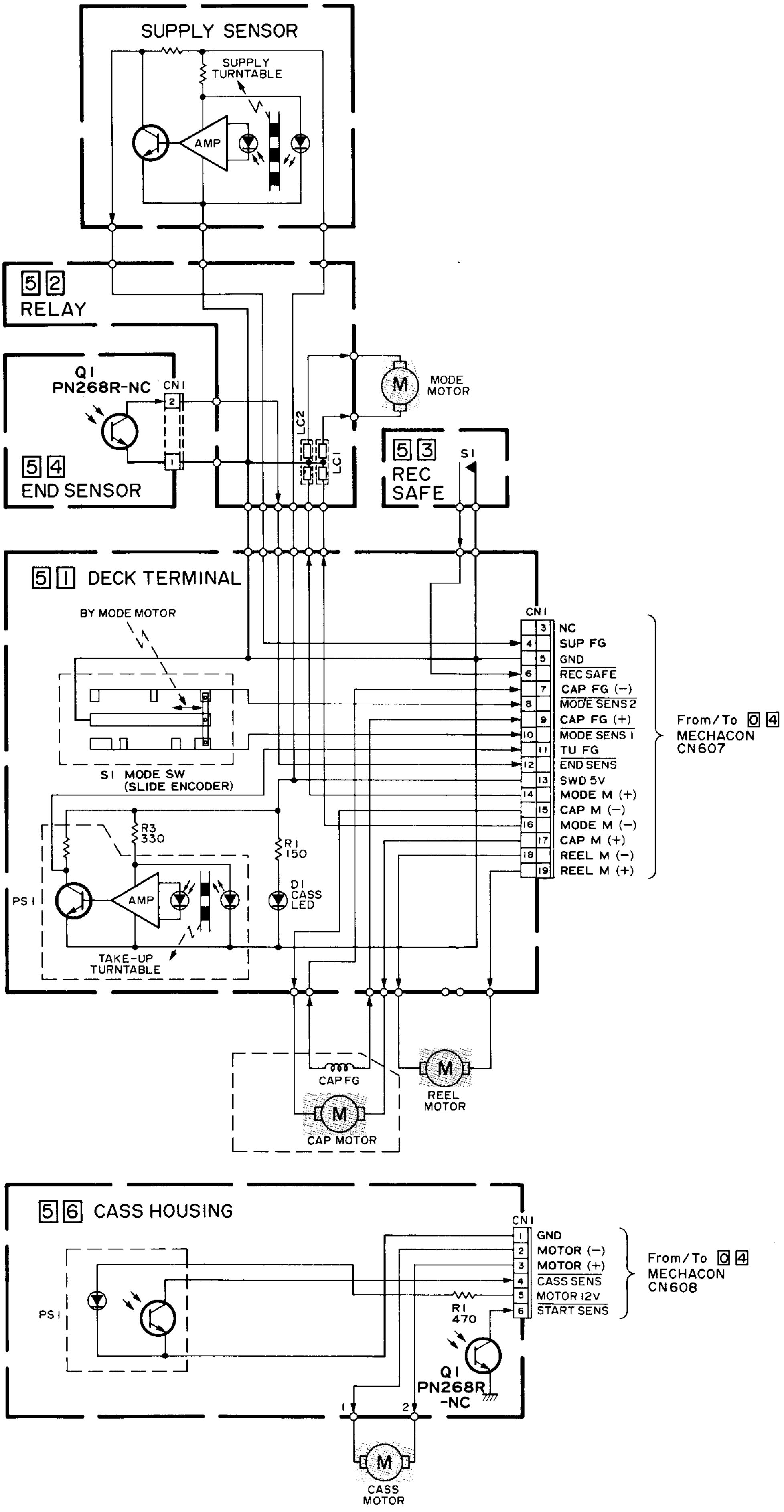
IC603 TRUTH TABLE

MOTOR	MODE	PINS			
		IN		OUT	
		5	8	4	9
REEL	STOP	L	L	O	O
	FWD	L	H	L	H
	REV	H	L	H	L
	BRAKE	H	H	L	L

IC604 TRUTH TABLE

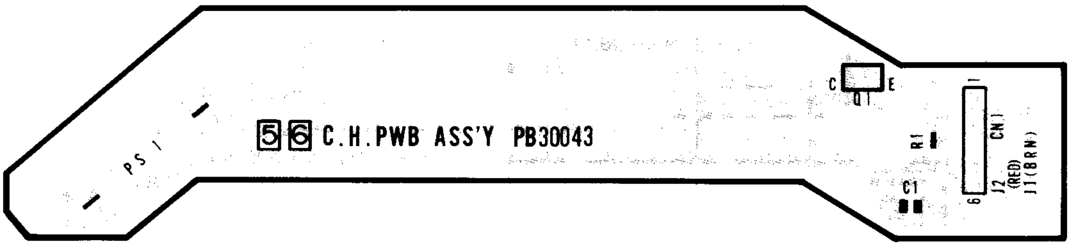
MOTOR	MODE	PINS			
		IN		OUT	
		5	6	2	10
CAP	STOP	L	L	O	O
	FWD	H	L	H	L
	REV	L	H	L	H
	BRAKE	H	H	L	L

3.11 DECK TERMINAL SCHEMATIC DIAGRAMS

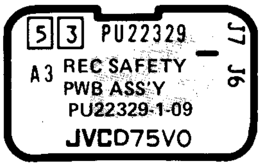

SUPPLY SENSOR
SUPPLY TURNTABLE
AMP
52
RELAY
Q1
PN268R-NC
CN1
2
1
54
END SENSOR
LC2
LC1
M
MODE MOTOR
53
REC SAFE
S1
51 DECK TERMINAL
BY MODE MOTOR
S1 MODE SW
(SLIDE ENCODER)
R3
330
R1
150
PS1
AMP
D1
CASS LED
TAKE-UP TURNTABLE
CN1
3 NC
4 SUP FG
5 GND
6 REC SAFE
7 CAP FG (−)
8 MODE SENS 2
9 CAP FG (+)
10 MODE SENS 1
11 TU FG
12 END SENS
13 SWD 5V
14 MODE M (+)
15 CAP M (−)
16 MODE M (−)
17 CAP M (+)
18 REEL M (−)
19 REEL M (+)
From/To 04
MECHACON
CN607
CAP FG
M
CAP MOTOR
M
REEL MOTOR
56 CASS HOUSING
CN1
1 GND
2 MOTOR (−)
3 MOTOR (+)
4 CASS SENS
5 MOTOR 12V
6 START SENS
From/To 04
MECHACON
CN608
PS1
R1
470
Q1
PN268R
-NC
1
2
M
CASS
MOTOR
6
5
4
3
2
1
A
B
C
D

3.12 MECHANISM CONTROL AND SERVO CIRCUIT BOARDS

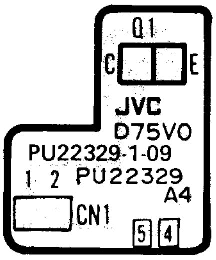
—CASSETTE HOUSING—


5 6 C.H.PWB ASS'Y PB30043
PS1
C
E
Q1
R1
C1
1
6
CN1
J2
(RED)
J1(BRN)

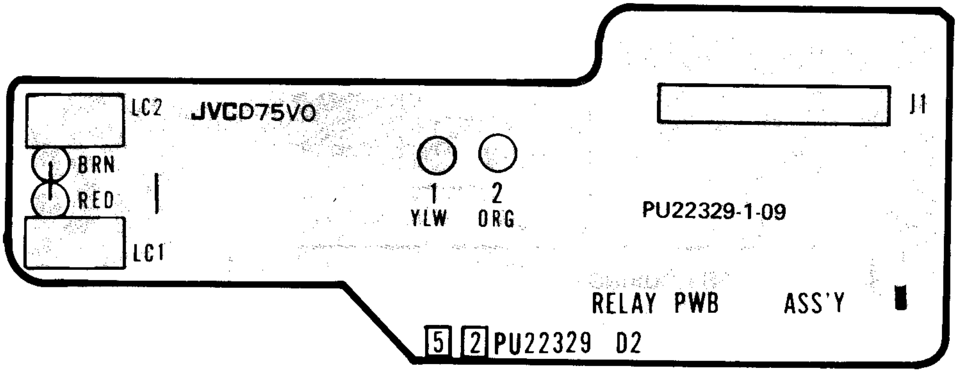
—REC SAFETY—


5 3 PU22329
J7
J6
A3
REC SAFETY
PWB ASS'Y
PU22329-1-09
JVCD75VO

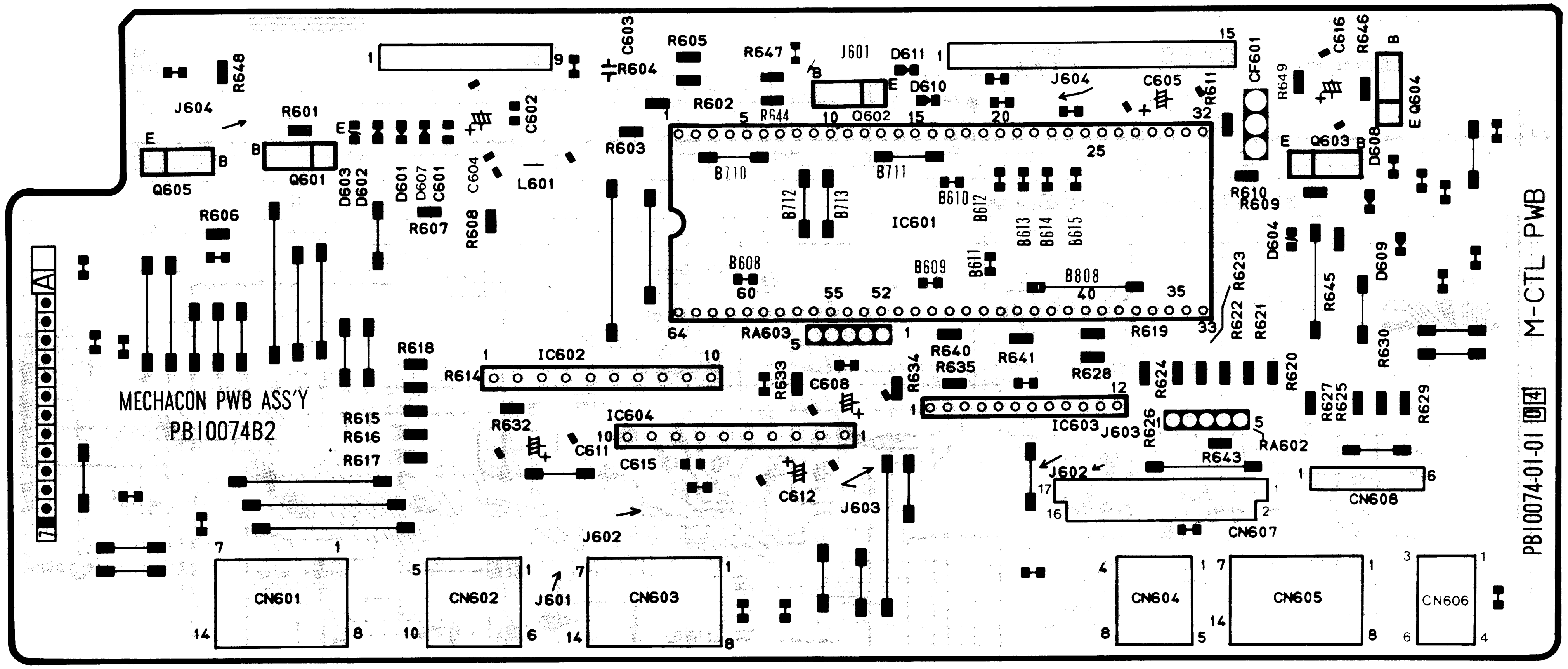
—END SENSOR—


Q1
C
E
JVC
D75VO
PU22329-1-09
1 2 PU22329
A4
CN1
5 4

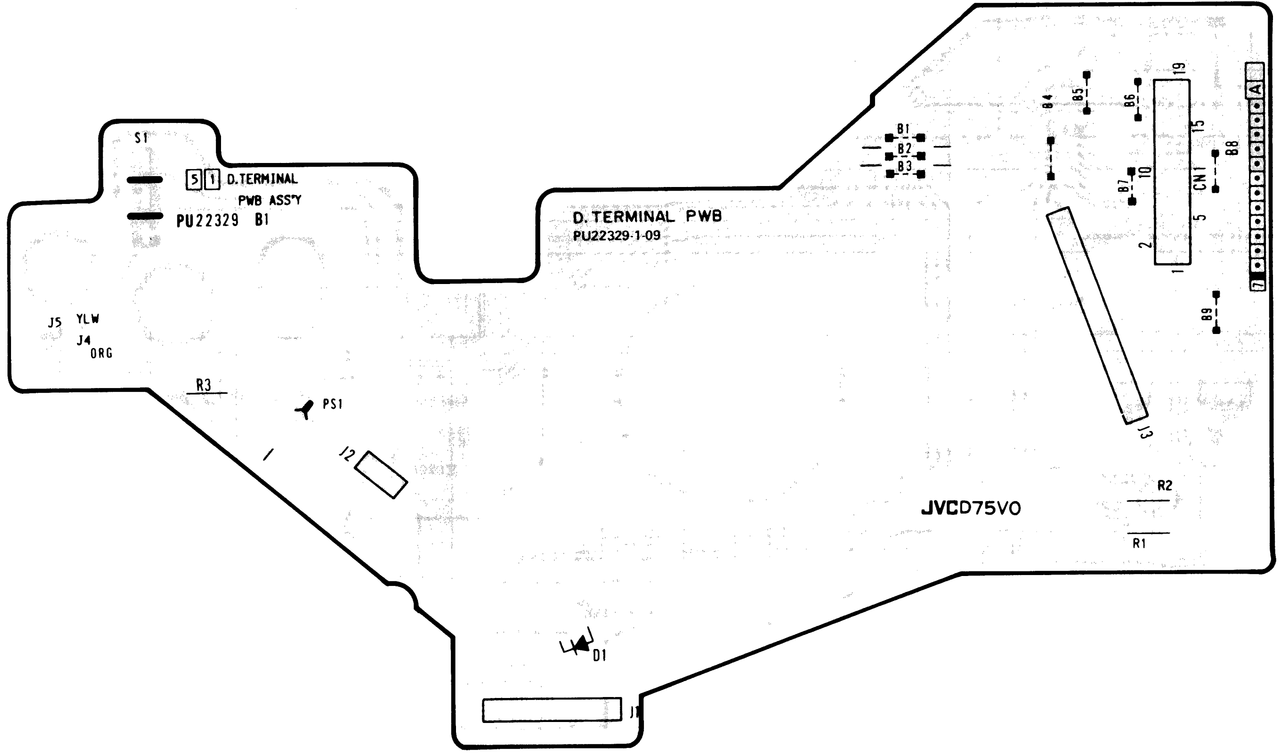
—RELAY—


LC2
JVCD75VO
BRN
RED
LC1
1
YLW
2
ORG
J1
PU22329-1-09
RELAY PWB ASS'Y
5 2 PU22329 D2

– MECHANISM CONTROL –


MECHACON PWB ASS'Y
PB10074B2
M-CTL PWB
PB10074-01-01 04
IC601
IC602
IC603
IC604
CN601
CN602
CN603
CN604
CN605
CN606
CN607
CN608
Q601
Q602
Q603
Q604
Q605
RA602
RA603
CF601
L601

– DECK TERMINAL –


D.TERMINAL PWB ASS'Y
PU22329 B1
D.TERMINAL PWB
PU22329-1-09
JVCD75VO
J5 YLW
J4 ORG
PS1
CN1
J1
J2
J3
D1
S1

– SERVO –

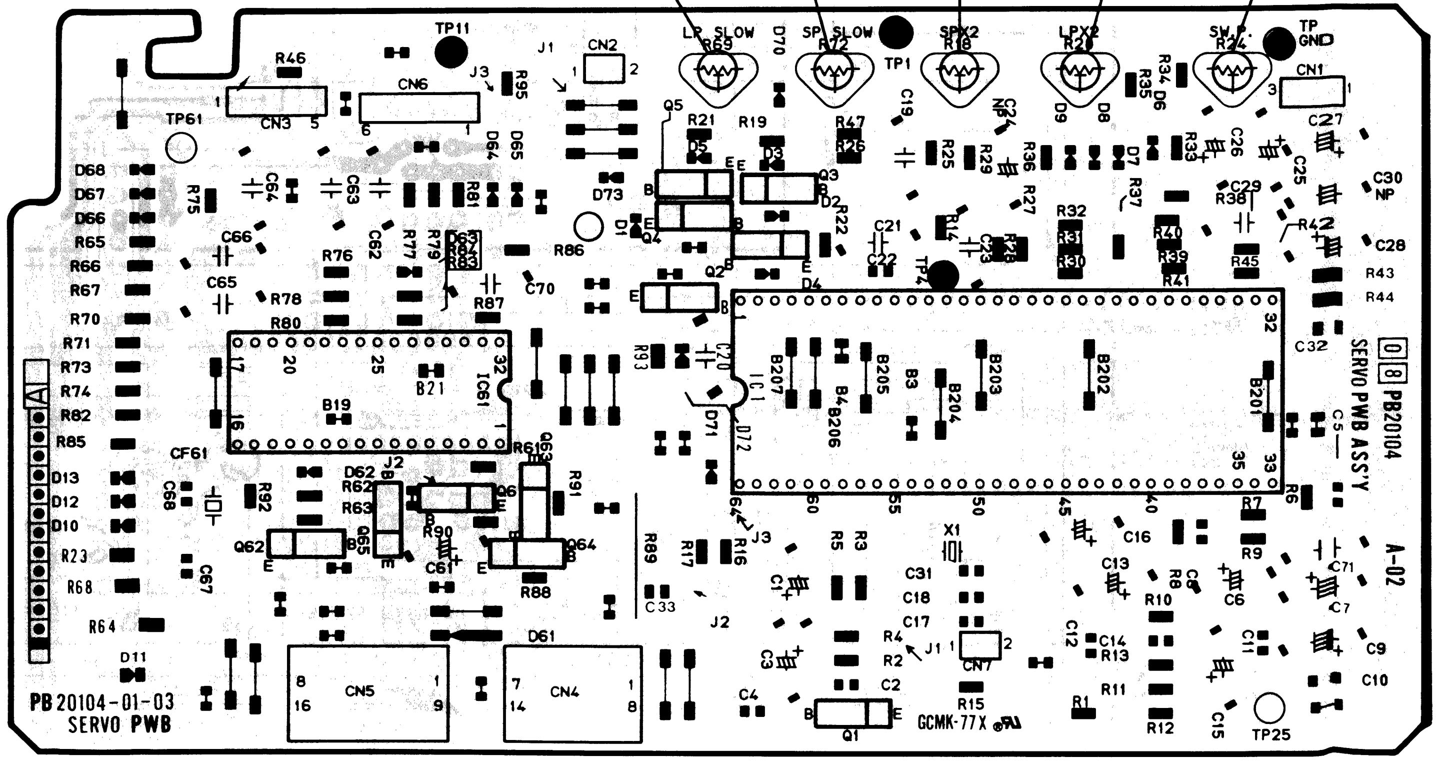
R69
LP PRESET
(SLOW)

R72
SP PRESET
(SLOW)

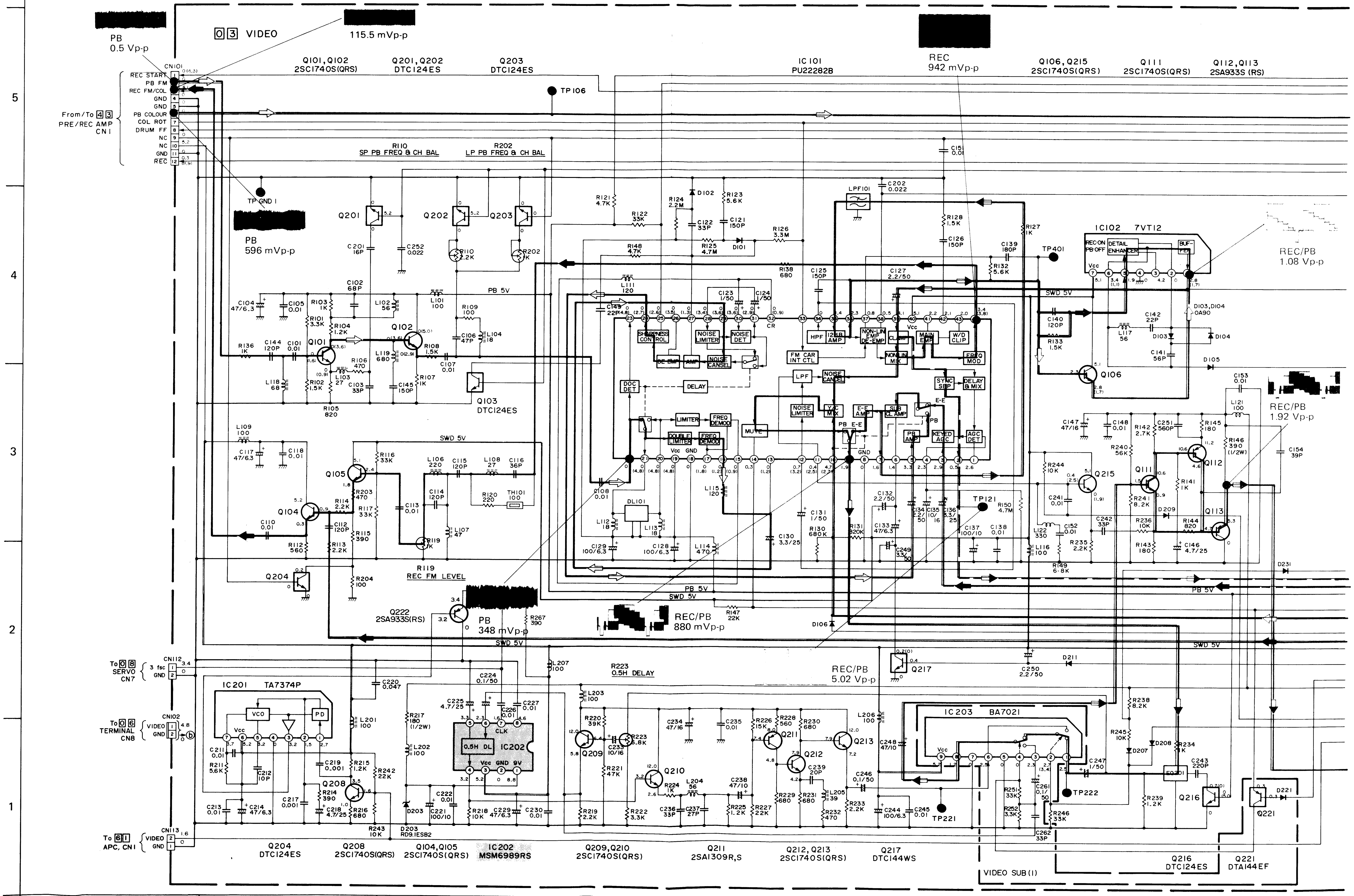
R18
SP x2
TK PRESET

R20
LP x2
TK PRESET

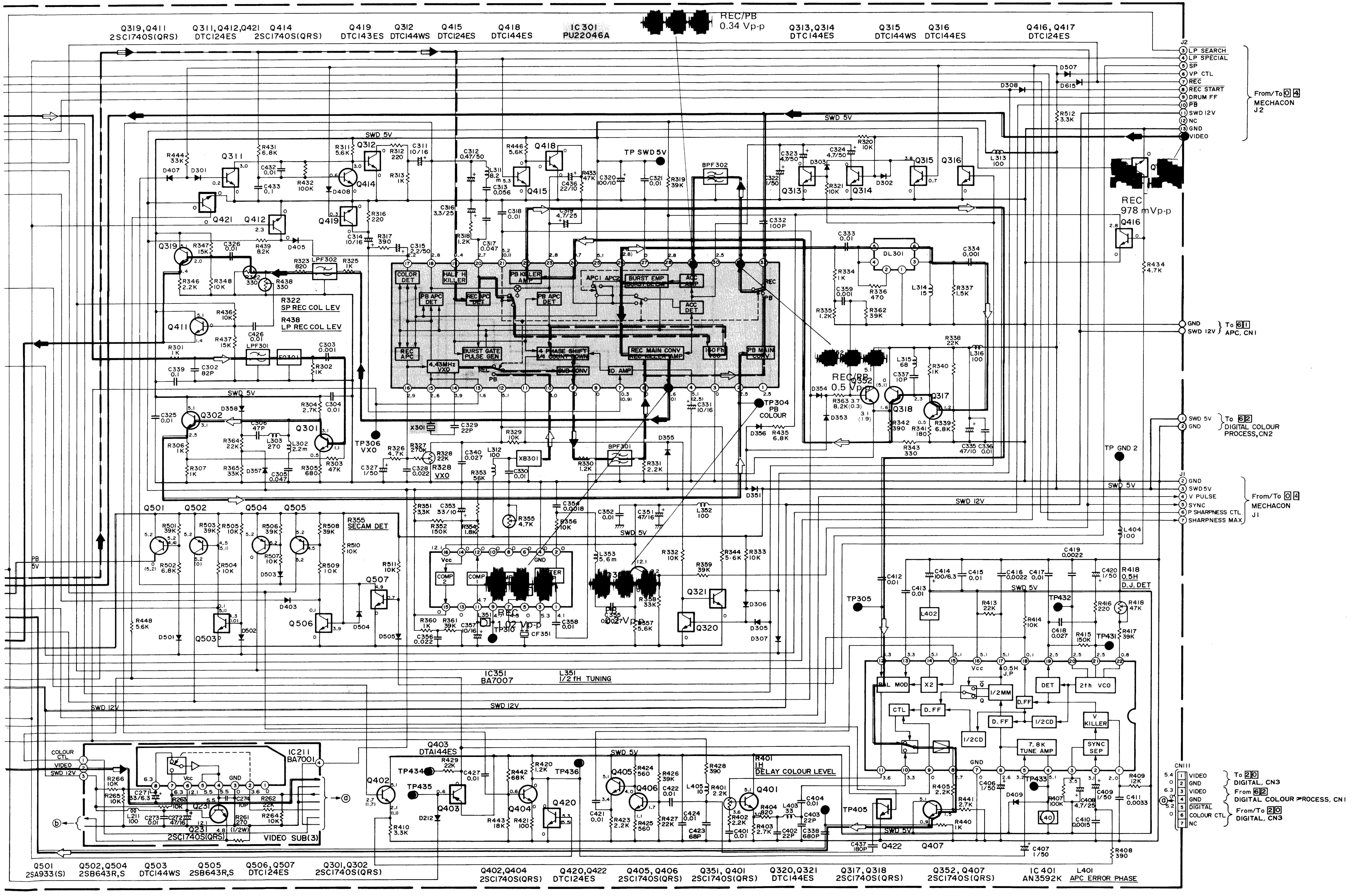
R24
PB SW
POINT


LP SLOW
SP SLOW
SPX2
LPX2
SW.P
TP GND
TP1
TP11
TP61
TP25
IC1
IC61
X1
CN1
CN2
CN3
CN4
CN5
CN6
CN7
CF61
PB20104-01-03
SERVO PWB
08 PB20104
SERVO PWB ASS'Y
A-02
GCMK-77X

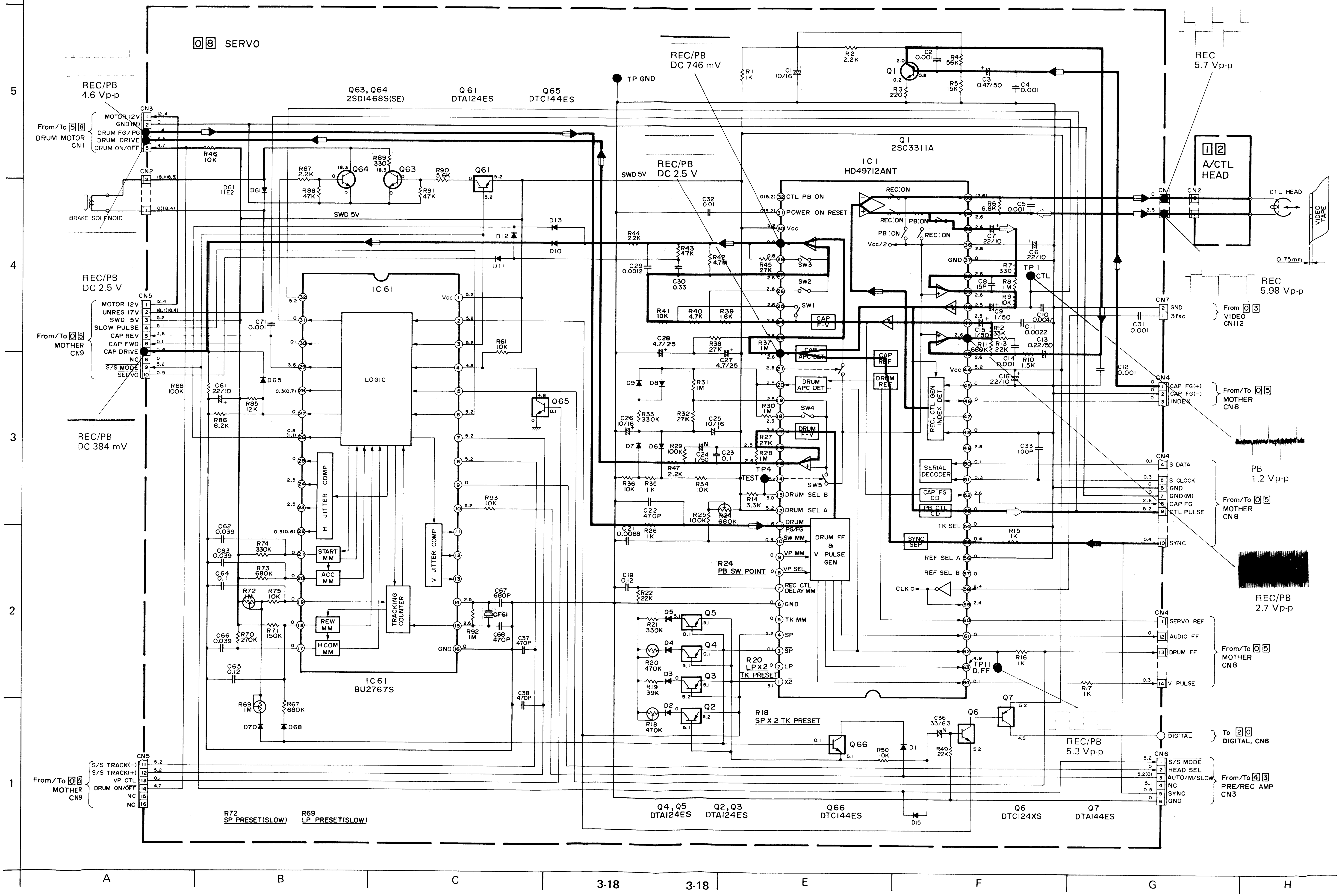
3.13 VIDEO SCHEMATIC DIAGRAM



03 VIDEO
PB 0.5 Vp-p
115.5 mVp-p
From/To 43 PRE/REC AMP CN1
CN101
REC START
PB FM
REC FM/COL
GND
GND
PB COLOUR
COL ROT
DRUM FF
NC
NC
GND
REC
Q101,Q102 2SC1740S(QRS)
Q201,Q202 DTC124ES
Q203 DTC124ES
IC101 PU22282B
REC 942 mVp-p
Q106,Q215 2SC1740S(QRS)
Q111 2SC1740S(QRS)
Q112,Q113 2SA933S (RS)
TP106
R110 SP PB FREQ & CH BAL
R202 LP PB FREQ & CH BAL
TP GND 1
PB 596 mVp-p
Q201
Q202
Q203
Q101
Q102
Q103 DTC124ES
Q104
Q105
Q204
Q222 2SA933S(RS)
PB 348 mVp-p
REC/PB 880 mVp-p
R119 REC FM LEVEL
PB 5V
SWD 5V
LPF101
IC102 7VT12
REC ON PB OFF
DETAIL ENHANCER
BUF-FER
REC/PB 1.08 Vp-p
TP401
D103,D104 OA90
Q106
REC/PB 1.92 Vp-p
Q215
Q111
Q112
Q113
SHARPNESS CONTROL
NOISE LIMITER
NOISE DET
DE EMP
AMP
NOISE CANSEL
DOC DET
DELAY
LIMITER
FREQ DEMOD
DOUBLE LIMITER
MUTE
FM CAR INT CTL
HPF
12dB AMP
NON-LIN EMP DE-EMP
CLAMP
MAIN EMP
W/D CLIP
NON LIN MIX
FREQ MOD
LPF
NOISE CANCEL
Y/C MIX
E-E AMP
SUB CLAMP
SYNC SEP
DELAY & MIX
PB AMP
KEYED AGC
AGC DET
PB E-E
DL101
TP121
D106
Q217
REC/PB 5.02 Vp-p
To 08 SERVO CN7
CN112
3 fsc
GND
IC201 TA7374P
VCO
PD
To 06 TERMINAL CN8
CN102
VIDEO
GND
To 61 APC, CN1
CN113
Q208
IC202
0.5H DL
CLK
Vcc GND 9V
R223 0.5H DELAY
Q209
Q210
Q211
Q212
Q213
IC203 BA7021
TP222
TP221
Q216
Q221
VIDEO SUB (1)
Q204 DTC124ES
Q208 2SC1740S(QRS)
Q104,Q105 2SC1740S(QRS)
IC202 MSM6989RS
Q209,Q210 2SC1740S(QRS)
Q211 2SA1309R,S
Q212,Q213 2SC1740S(QRS)
Q217 DTC144WS
Q216 DTC124ES
Q221 DTA144EF
D203 RD9.1ESB2
6
5
4
3
2
1
A
B
C
E
F
G
H


Q319,Q411 2SC1740S(QRS)
Q311,Q412,Q421 DTC124ES
Q414 2SC1740S(QRS)
Q419 DTC143ES
Q312 DTC144WS
Q415 DTC124ES
Q418 DTC144ES
IC301 PU22046A
REC/PB 0.34 Vp-p
Q313,Q314 DTC144ES
Q315 DTC144WS
Q316 DTC144ES
Q416,Q417 DTC124ES
J2
3 LP SEARCH
4 LP SPECIAL
5 SP
6 VP CTL
7 REC
8 REC START
9 DRUM FF
10 PB
11 SWD 12V
12 NC
13 GND
1 VIDEO
From/To 04 MECHACON J2
SWD 5V
TP SWD 5V
REC 978 mVp-p
COLOR DET
HALF H KILLER
PB KILLER AMP
BURST EMP
ACC AMP
PB APC DET
REC APC DET
ACC DET
REC APC
4.43MHz VXO
BURST GATE PULSE GEN
4 PHASE SHIFT 1/4 COUNT DOWN
SUB CONV
ID AMP
REC MAIN CONV REC KILLER AMP
160 fH VCO
PB MAIN CONV
R322 SP REC COL LEV
R438 LP REC COL LEV
LPF302
LPF301
BPF302
BPF301
DL301
GND
SWD 12V
To 61 APC, CN1
REC/PB 0.5 Vp-p
TP304 PB COLOUR
TP306 VXO
R328 VXO
X301
XB301
SWD 5V
GND
To 62 DIGITAL COLOUR PROCESS, CN2
TP GND 2
J1
2 GND
3 SWD 5V
4 V PULSE
5 SYNC
6 P SHARPNESS CTL
7 SHARPNESS MAX
From/To 04 MECHACON J1
SWD 12V
Q501 Q502 Q504 Q505
R355 SECAM DET
Q507 Q506 Q503
PB 5V
COMP 2
COMP
LIMITER
1.02 Vp-p
0.27 Vp-p
TP310
CF351
Q321 Q320
IC351 BA7007
L351 1/2 fH TUNING
SWD 12V
R418 0.5H D.J. DET
TP305 TP432 TP431
BAL MOD
X2
1/2MM
DET
2fH VCO
CTL
D.FF
1/2CD
V KILLER
7.8K TUNE AMP
SYNC SEP
L402
COLOUR CTL
VIDEO
SWD 12V
IC211 BA7001
VIDEO SUB(3)
Q231 2SC1740S(QRS)
Q403 DTA144ES
TP434 TP435 TP436
Q402 Q404 Q420
Q405 Q406 Q401
R401 1H DELAY COLOUR LEVEL
TP405
Q422 Q407
TP433
CN111
1 VIDEO
2 GND
3 VIDEO
4 GND
5 DIGITAL COLOUR CTL
7 NC
To 20 DIGITAL, CN3
From 62 DIGITAL COLOUR PROCESS, CN1
From/To 20 DIGITAL, CN3
Q501 2SA933(S)
Q502,Q504 2SB643R,S
Q503 DTC144WS
Q505 2SB643R,S
Q506,Q507 DTC124ES
Q301,Q302 2SC1740S(QRS)
Q402,Q404 2SC1740S(QRS)
Q420,Q422 DTC124ES
Q405,Q406 2SC1740S(QRS)
Q351,Q401 2SC1740S(QRS)
Q320,Q321 DTC144ES
Q317,Q318 2SC1740S(QRS)
Q352,Q407 2SC1740S(QRS)
IC401 AN3592K
L401 APC ERROR PHASE

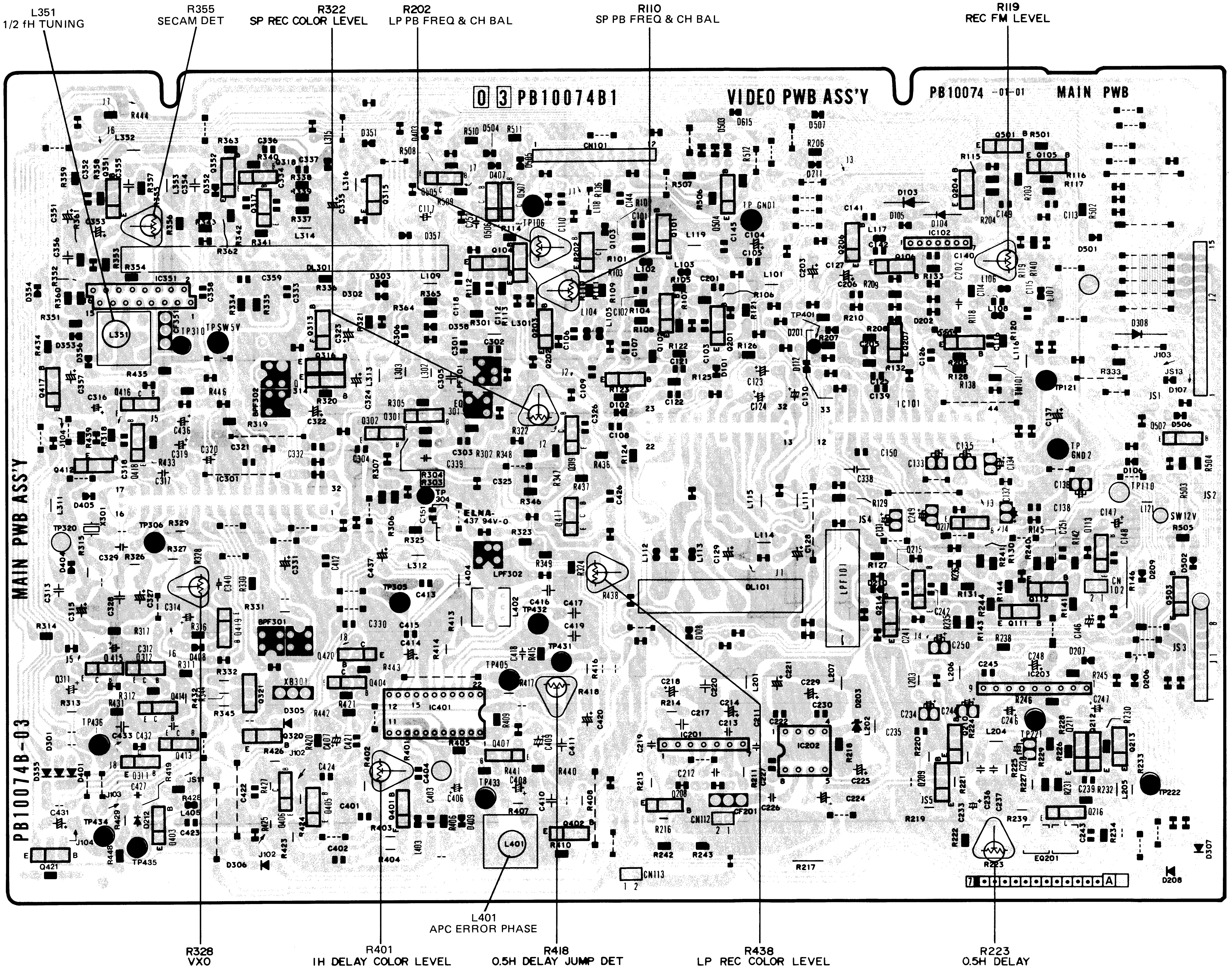
3.14 SERVO SCHEMATIC DIAGRAM



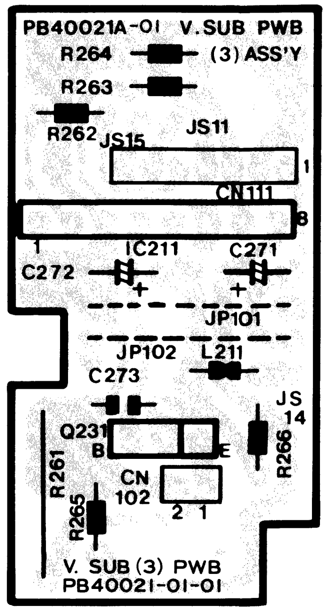
08 SERVO
REC/PB 4.6 Vp-p
CN3
MOTOR 12V
GND(M)
DRUM FG/PG
DRUM DRIVE
DRUM ON/OFF
From/To 58 DRUM MOTOR CN1
CN2
BRAKE SOLENOID
REC/PB DC 2.5 V
CN5
MOTOR 12V
UNREG 17V
SWD 5V
SLOW PULSE
CAP REV
CAP FWD
CAP DRIVE
NC
S/S MODE
SERVO
From/To 05 MOTHER CN9
REC/PB DC 384 mV
S/S TRACK(-)
S/S TRACK(+)
VP CTL
DRUM ON/OFF
NC
NC
From/To 05 MOTHER CN9
Q63,Q64 2SD1468S(SE)
Q61 DTA124ES
Q65 DTC144ES
TP GND
REC/PB DC 746 mV
REC/PB DC 2.5 V
SWD 5V
Q1 2SC3311A
IC1 HD49712ANT
IC61
LOGIC
JITTER COMP
H
V JITTER COMP
START MM
ACC MM
REW MM
H COM MM
TRACKING COUNTER
CF61
IC61 BU2767S
R72 SP PRESET(SLOW)
R69 LP PRESET(SLOW)
CTL PB ON
POWER ON RESET
Vcc
SW1
SW2
SW3
SW4
SW5
CAP F-V
CAP APC DET
CAP REF
DRUM APC DET
DRUM REF
DRUM F-V
TP4
TEST
DRUM SEL B
DRUM SEL A
DRUM PG/FG
SW MM
VP MM
VP SEL
REC CTL DELAY MM
GND
TK MM
SP
LP
X2
DRUM FF & V PULSE GEN
R24 PB SW POINT
R20 LPX2 TK PRESET
R18 SP X 2 TK PRESET
Q4,Q5 DTA124ES
Q2,Q3 DTA124ES
Q66 DTC144ES
Q6 DTC124XS
Q7 DTA144ES
REC:ON
PB:ON
Vcc/2
TP1 CTL
REC, CTL GEN INDEX DET
SERIAL DECODER
CAP FG CD
PB CTL CD
SYNC SEP
TK SEL
REF SEL A
REF SEL B
CLK
TP11 D.FF
REC 5.7 Vp-p
12 A/CTL HEAD
CN1
CN2
CTL HEAD
VIDEO TAPE
0.75mm
REC 5.98 Vp-p
CN7
GND
3fsc
From 03 VIDEO CN112
CN4
CAP FG(+)
CAP FG(-)
INDEX
From/To 05 MOTHER CN8
PB 1.2 Vp-p
S DATA
S CLOCK
GND
GND(M)
CAP FG
CTL PULSE
SYNC
From/To 05 MOTHER CN8
REC/PB 2.7 Vp-p
SERVO REF
AUDIO FF
DRUM FF
V PULSE
From/To 05 MOTHER CN8
REC/PB 5.3 Vp-p
DIGITAL
To 20 DIGITAL, CN6
CN6
S/S MODE
HEAD SEL
AUTO/M/SLOW
NC
SYNC
GND
From/To 43 PRE/REC AMP CN3
A
B
C
D
E
F
G
H
1
2
3
4
5
6

3.15 VIDEO, VIDEO SUB (3) AND VIDEO SUB (1) CIRCUIT BOARDS

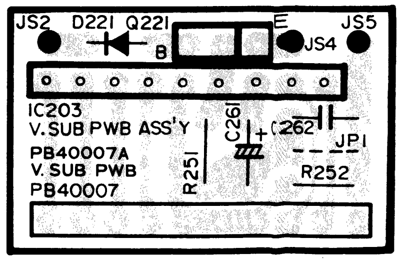
– VIDEO –


L351
1/2 fH TUNING
R355
SECAM DET
R322
SP REC COLOR LEVEL
R202
LP PB FREQ & CH BAL
R110
SP PB FREQ & CH BAL
R119
REC FM LEVEL
03 PB10074B1
VIDEO PWB ASS'Y
PB10074 -01-01
MAIN PWB
MAIN PWB ASS'Y
PB10074B-03
ELNA-
437 94V-0
R328
VXO
R401
1H DELAY COLOR LEVEL
L401
APC ERROR PHASE
R418
0.5H DELAY JUMP DET
R438
LP REC COLOR LEVEL
R223
0.5H DELAY

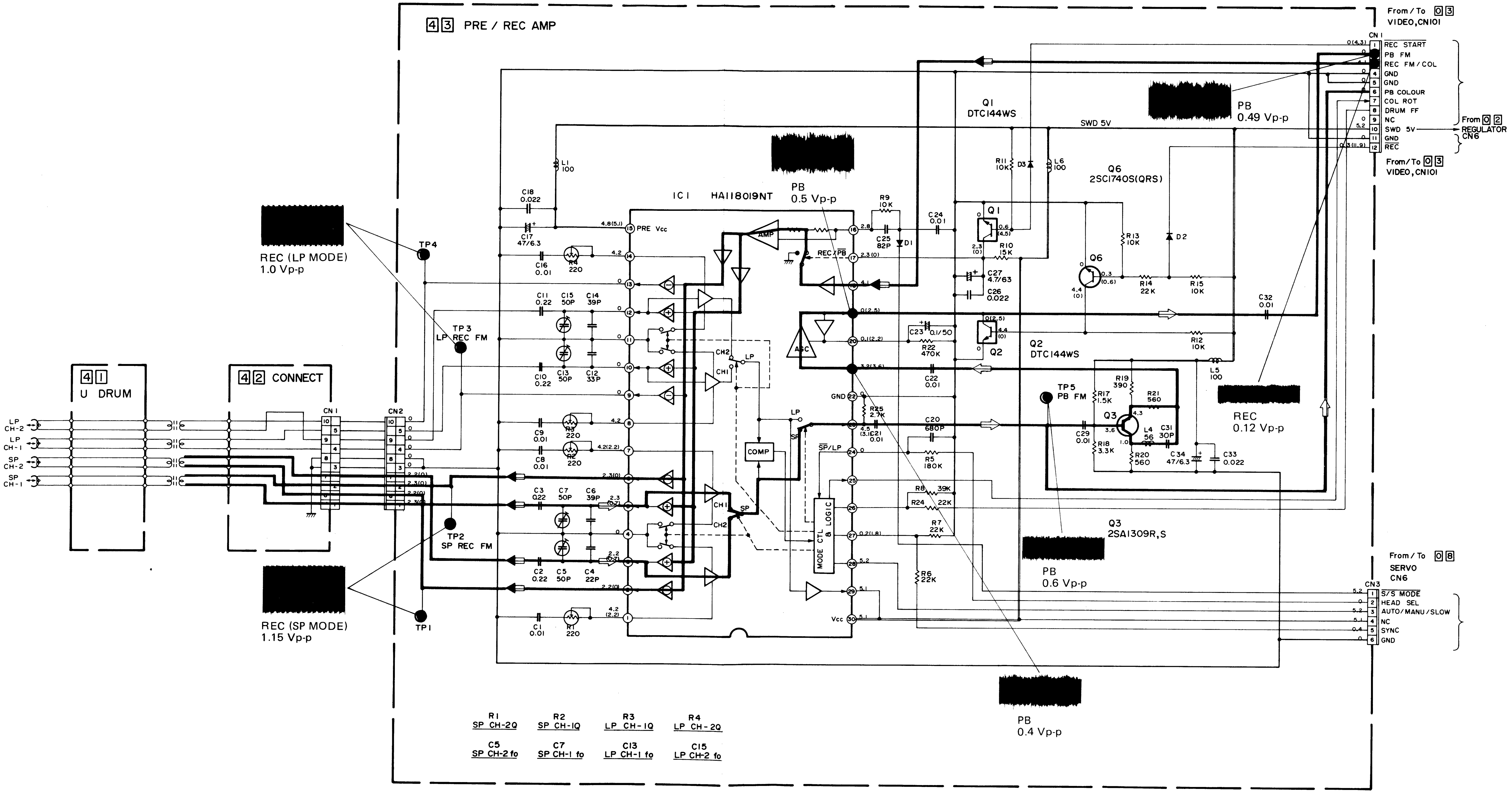
– VIDEO SUB (3) –


PB40021A-01 V.SUB PWB
R264
(3) ASS'Y
R263
R262
JS15
JS11
CN111
IC211
C271
C272
JP101
JP102
L211
C273
Q231
JS
14
R261
R265
CN
102
R266
V. SUB (3) PWB
PB40021-01-01

– VIDEO SUB (1) –


JS2
D221
Q221
JS5
JS4
IC203
V.SUB PWB ASS'Y
PB40007A
V. SUB PWB
PB40007
C261
C262
JP1
R251
R252

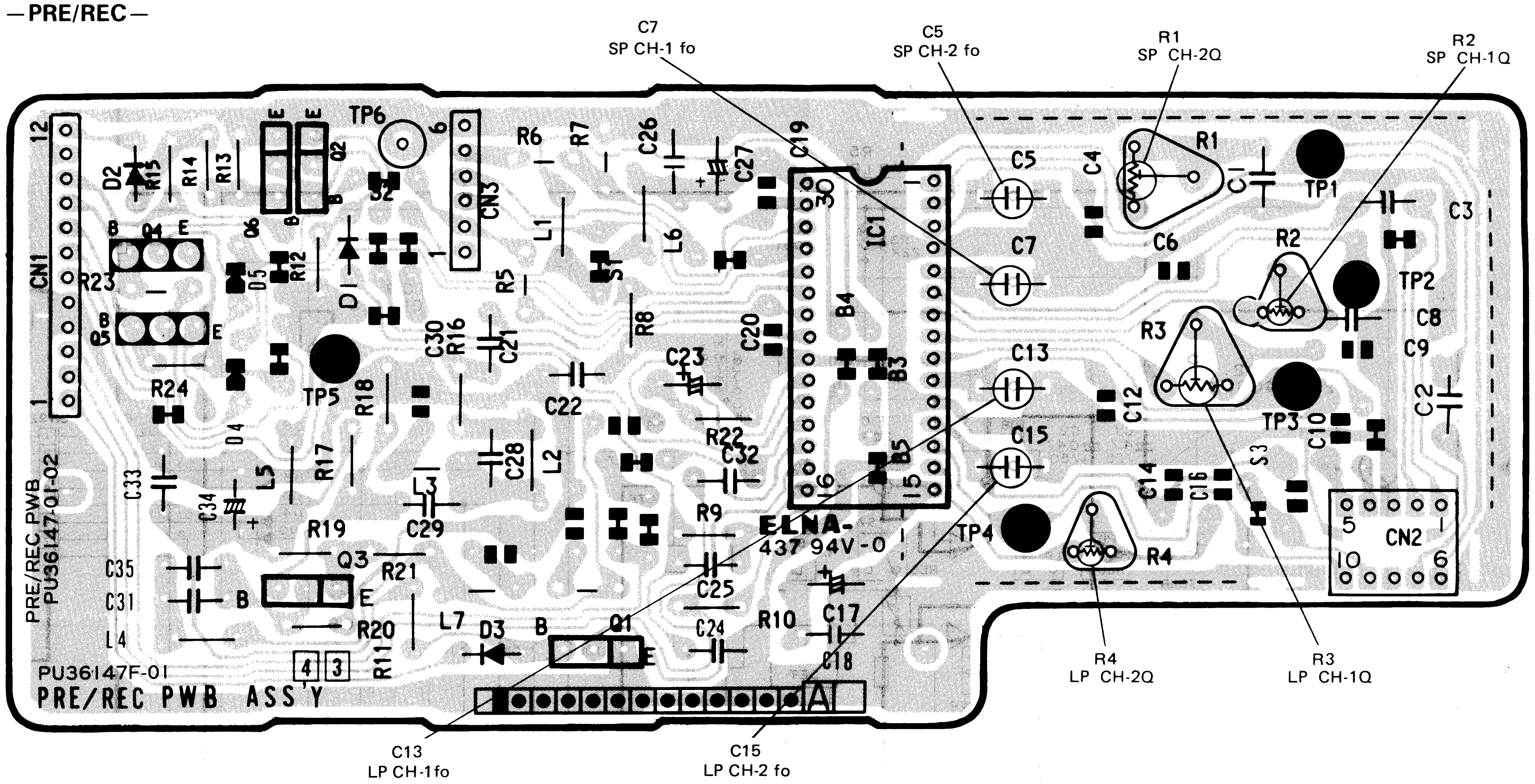
3.16 PRE/REC SCHEMATIC DIAGRAM



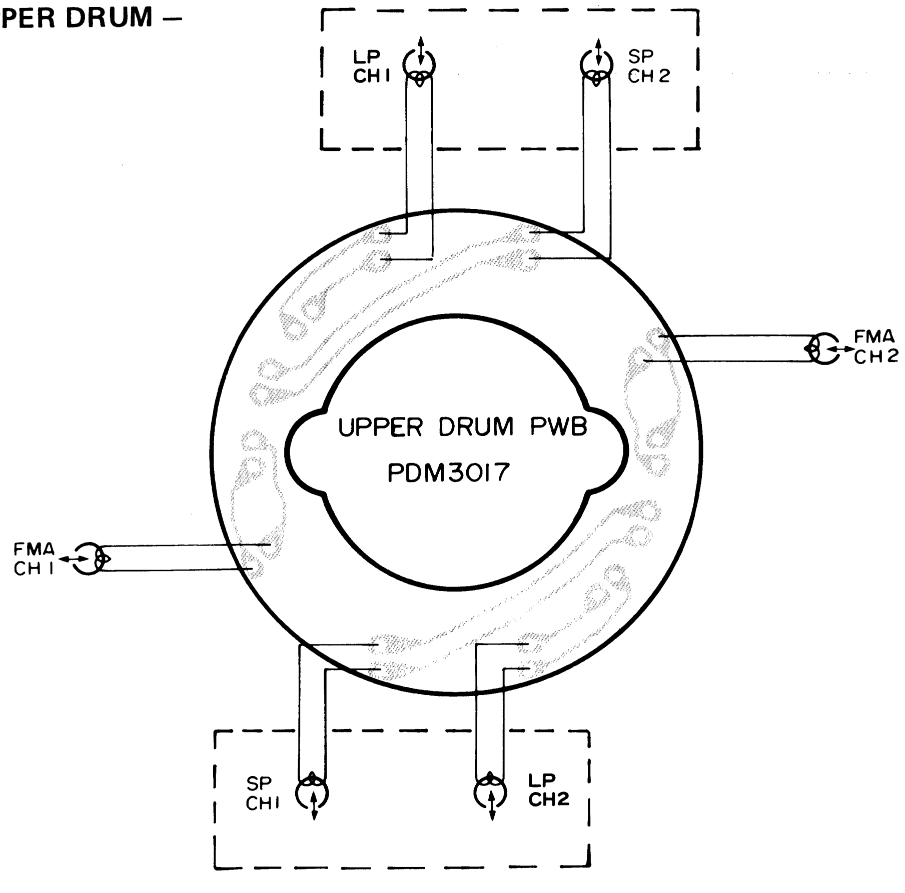
43 PRE / REC AMP
41 U DRUM
42 CONNECT
LP CH-2
LP CH-1
SP CH-2
SP CH-1
CN1
CN2
REC (LP MODE) 1.0 Vp-p
REC (SP MODE) 1.15 Vp-p
TP1
TP2 SP REC FM
TP3 LP REC FM
TP4
TP5 PB FM
IC1 HA118019NT
PB 0.5 Vp-p
PB 0.49 Vp-p
PB 0.6 Vp-p
PB 0.4 Vp-p
REC 0.12 Vp-p
PRE Vcc
AMP
REC/PB
ASC
COMP
MODE CTL & LOGIC
SP/LP
CH1
CH2
LP
SP
Vcc
GND
Q1 DTC144WS
Q2 DTC144WS
Q3 2SA1309R,S
Q6 2SC1740S(QRS)
SWD 5V
L1 100
L5 100
L6 100
L4 56
C18 0.022
C17 47/6.3
C16 0.01
C11 0.22
C15 50P
C14 39P
C10 0.22
C13 50P
C12 33P
C9 0.01
C8 0.01
C3 0.22
C7 50P
C6 39P
C2 0.22
C5 50P
C4 22P
C1 0.01
C24 0.01
C25 82P
C27 4.7/63
C26 0.022
C23 0.1/50
C22 0.01
C21 0.01
C20 680P
C29 0.01
C31 30P
C32 0.01
C33 0.022
C34 47/6.3
R1 220
R2 220
R3 220
R4 220
R5 180K
R6 22K
R7 22K
R8 39K
R9 10K
R10 15K
R11 10K
R12 10K
R13 10K
R14 22K
R15 10K
R17 1.5K
R18 3.3K
R19 390
R20 560
R21 560
R22 470K
R24 22K
R25 2.7K
D1
D2
D3
From/To 03 VIDEO,CN101
CN1
REC START
PB FM
REC FM/COL
GND
GND
PB COLOUR
COL ROT
DRUM FF
NC
SWD 5V
GND
REC
From 02 REGULATOR CN6
From/To 03 VIDEO,CN101
From/To 08 SERVO CN6
CN3
S/S MODE
HEAD SEL
AUTO/MANU/SLOW
NC
SYNC
GND
R1 SP CH-2Q
R2 SP CH-1Q
R3 LP CH-1Q
R4 LP CH-2Q
C5 SP CH-2 fo
C7 SP CH-1 fo
C13 LP CH-1 fo
C15 LP CH-2 fo

3.17 PRE/REC AND UPPER DRUM CIRCUIT BOARDS

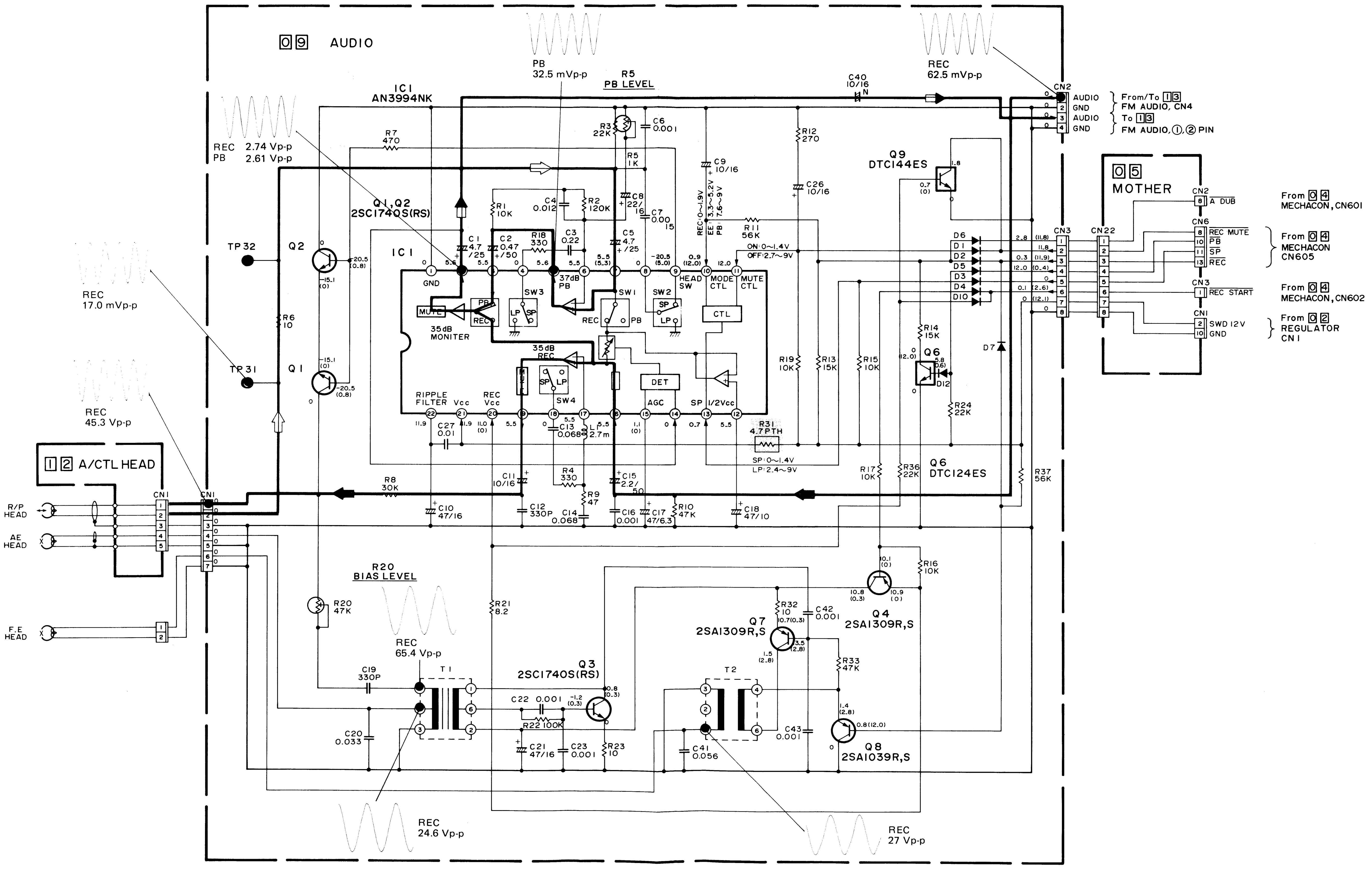
—PRE/REC—


C7
SP CH-1 fo
C5
SP CH-2 fo
R1
SP CH-2Q
R2
SP CH-1Q
R4
LP CH-2Q
R3
LP CH-1Q
C13
LP CH-1fo
C15
LP CH-2 fo
CN1
CN2
CN3
IC1
TP1
TP2
TP3
TP4
TP5
TP6
Q1
Q2
Q3
Q4
Q5
Q6
ELNA-
437 94V-0
PRE/REC PWB
PU36147-01-02
PU36147F-01
PRE/REC PWB ASS'Y

— UPPER DRUM —

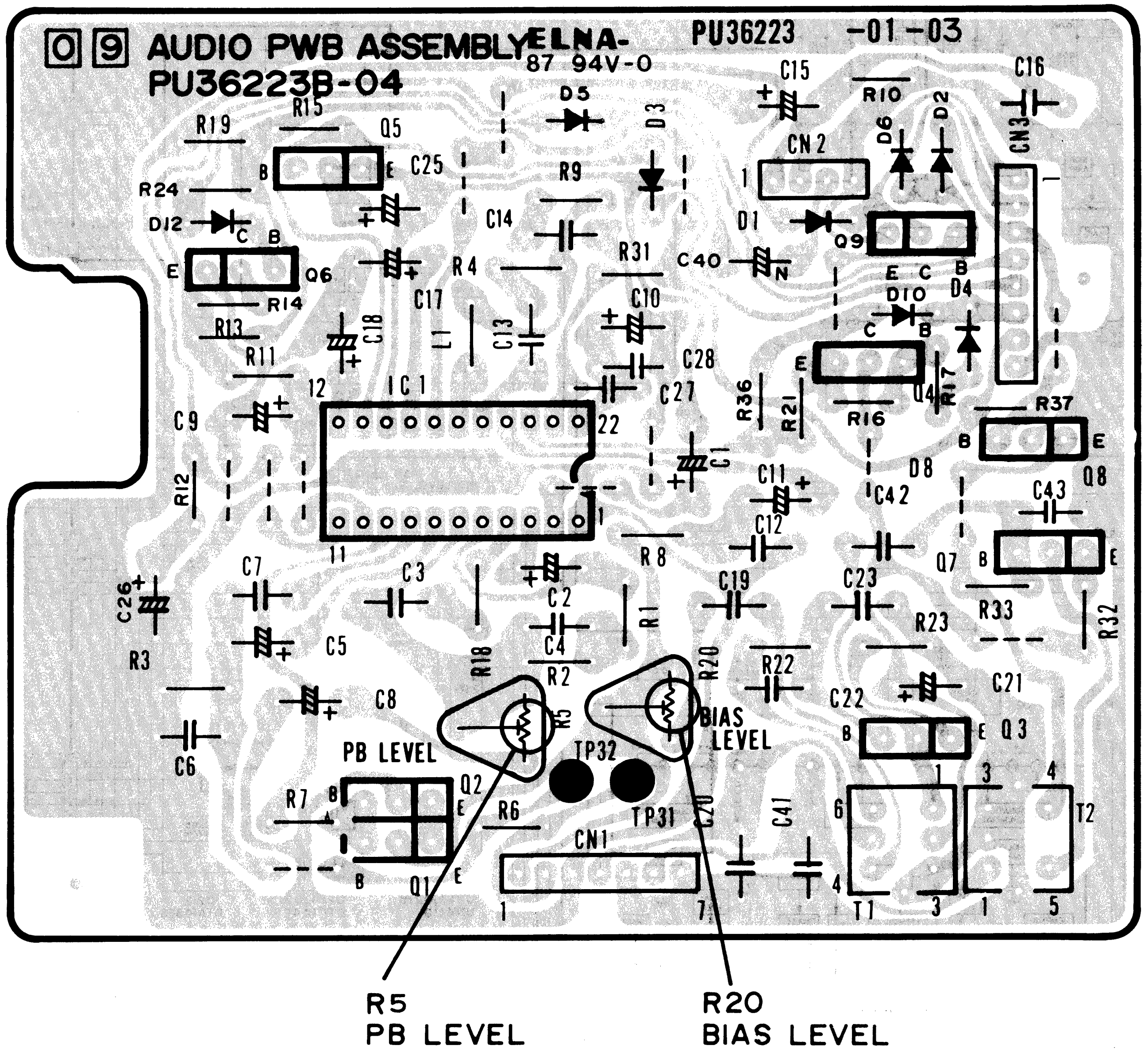

LP
CH1
SP
CH2
FMA
CH2
UPPER DRUM PWB
PDM3017
FMA
CH 1
SP
CHI
LP
CH2

3.18 AUDIO SCHEMATIC DIAGRAM

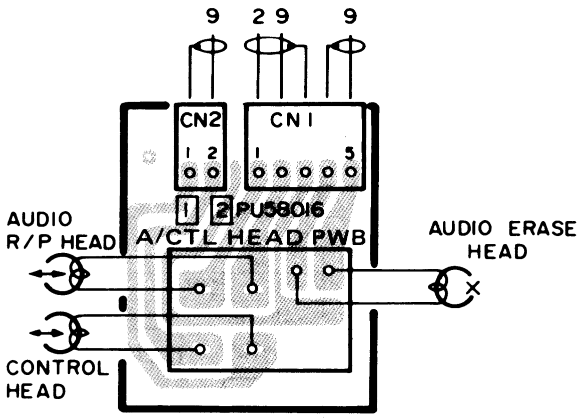

09 AUDIO
IC1 AN3994NK
Q1,Q2 2SC1740S(RS)
Q3 2SC1740S(RS)
Q4 2SA1309R,S
Q6 DTC124ES
Q7 2SA1309R,S
Q8 2SA1039R,S
Q9 DTC144ES
R5 PB LEVEL
R20 BIAS LEVEL
PB 32.5 mVp-p
REC 62.5 mVp-p
REC 2.74 Vp-p
PB 2.61 Vp-p
REC 17.0 mVp-p
REC 45.3 Vp-p
REC 65.4 Vp-p
REC 24.6 Vp-p
REC 27 Vp-p
TP32
TP31
12 A/CTL HEAD
R/P HEAD
AE HEAD
F.E HEAD
CN1
CN2
AUDIO
GND
From/To 13 FM AUDIO, CN4
To 13 FM AUDIO, ①, ② PIN
05 MOTHER
CN3
CN22
CN6
A DUB
REC MUTE
PB
SP
REC
REC START
SWD 12V
From 04 MECHACON, CN601
From 04 MECHACON CN605
From 04 MECHACON, CN602
From 02 REGULATOR CN1
MUTE
35dB MONITER
35dB REC
37dB PB
SW1
SW2
SW3
SW4
HEAD SW
MODE CTL
MUTE CTL
CTL
DET
AGC
RIPPLE FILTER
Vcc
REC Vcc
SP
1/2Vcc
GND
REC:0~1.9V
EE:3.3~5.2V
PB:7.6~9V
ON:0~1.4V
OFF:2.7~9V
SP:0~1.4V
LP:2.4~9V
R31 4.7PTH
T1
T2
D1
D2
D3
D4
D5
D6
D7
D10
D12

3.19 AUDIO AND A/CTL HEAD CIRCUIT BOARDS

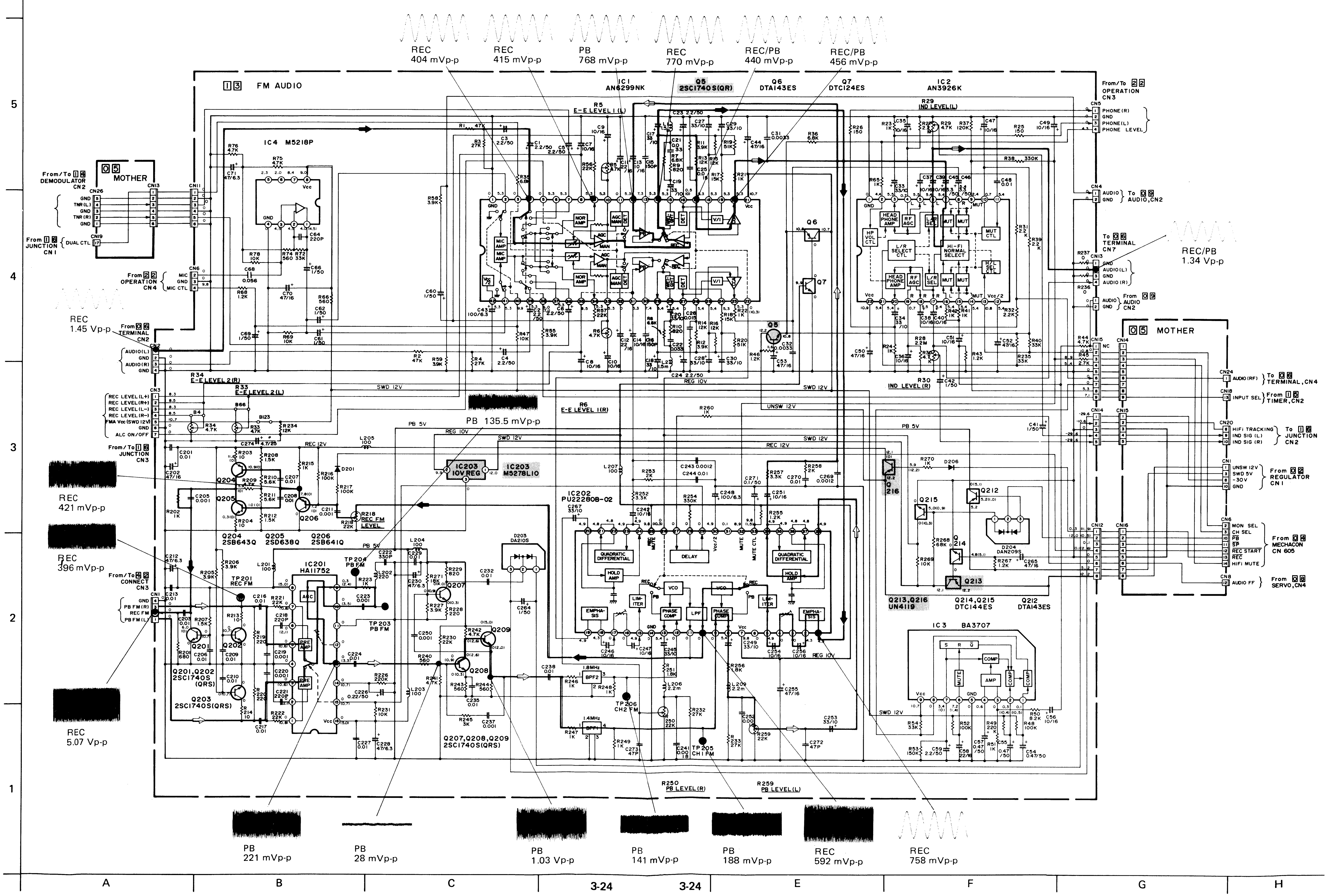
– AUDIO –


09 AUDIO PWB ASSEMBLY
PU36223B-04
ELNA-
87 94V-0
PU36223 -01-03
IC1
CN1
CN2
CN3
PB LEVEL
BIAS LEVEL
TP31
TP32
T1
T2
R5
PB LEVEL
R20
BIAS LEVEL

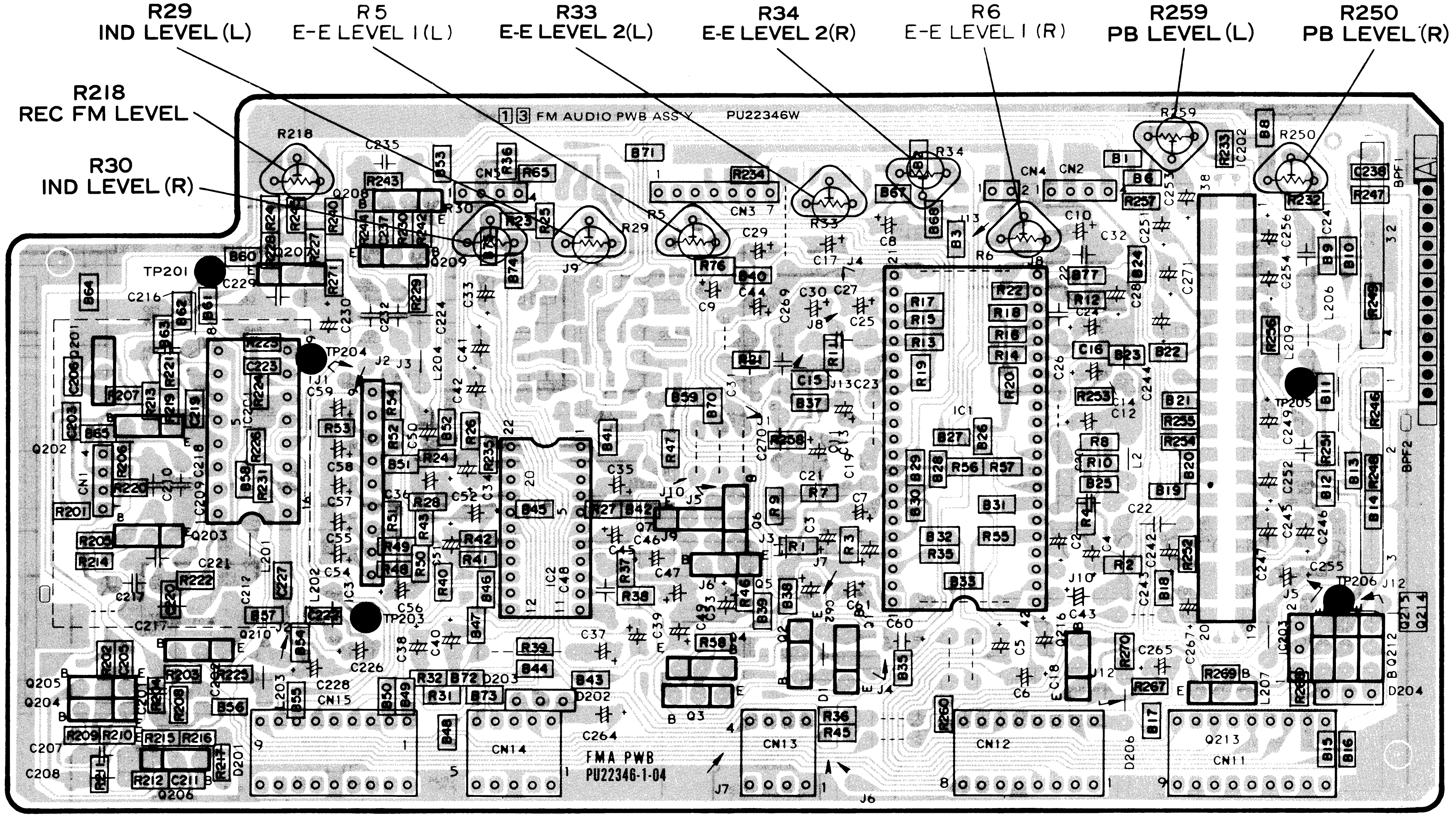
– A/CTL HEAD –


CN2
CN1
PU58016
A/CTL HEAD PWB
AUDIO R/P HEAD
CONTROL HEAD
AUDIO ERASE HEAD

3.20 FM AUDIO(FMA) SCHEMATIC DIAGRAM


REC 404 mVp-p
REC 415 mVp-p
PB 768 mVp-p
REC 770 mVp-p
REC/PB 440 mVp-p
REC/PB 456 mVp-p
REC/PB 1.34 Vp-p
REC 1.45 Vp-p
PB 135.5 mVp-p
REC 421 mVp-p
REC 396 mVp-p
REC 5.07 Vp-p
PB 221 mVp-p
PB 28 mVp-p
PB 1.03 Vp-p
PB 141 mVp-p
PB 188 mVp-p
REC 592 mVp-p
REC 758 mVp-p
13 FM AUDIO
IC1 AN6299NK
Q5 2SC1740S(QR)
Q6 DTA143ES
Q7 DTC124ES
IC2 AN3926K
IC4 M5218P
05 MOTHER
From/To 14 DEMODULATOR CN2
From 15 JUNCTION CN1
From 22 OPERATION CN4
From 06 TERMINAL CN2
From/To 15 JUNCTION CN3
From/To 42 CONNECT CN3
From/To 22 OPERATION CN3
PHONE (R)
GND
PHONE (L)
PHONE LEVEL
AUDIO To 06 AUDIO,CN2
To 06 TERMINAL CN7
From 06 AUDIO CN2
R5 E-E LEVEL 1(L)
R6 E-E LEVEL 1(R)
R29 IND LEVEL(L)
R30 IND LEVEL(R)
R34 E-E LEVEL 2(R)
R33 E-E LEVEL 2(L)
R218 REC FM LEVEL
R250 PB LEVEL(R)
R259 PB LEVEL(L)
IC203 10V REG
IC203 M5278L10
Q204 2SB643Q
Q205 2SD638Q
Q206 2SB641Q
IC201 HA11752
TP201 REC FM
TP204 PB FM
TP203 PB FM
TP206 CH2 FM
TP205 CH1 FM
Q201,Q202 2SC1740S (QRS)
Q203 2SC1740S(QRS)
Q207,Q208,Q209 2SC1740S(QRS)
D203 DA210S
IC202 PU2280B-02
QUADRATIC DIFFERENTIAL
HOLD AMP
DELAY
VCO
PHASE COMP
LPF
LIM-ITER
EMPHA-SIS
BPF2 1.8MHz
BPF1 1.4MHz
Q216
Q215
Q212
Q214
Q213
D204 DAN209S
D206
Q213,Q216 UN4119
Q214,Q215 DTC144ES
Q212 DTA143ES
IC3 BA3707
COMP
AMP
MUTE
05 MOTHER
To 06 TERMINAL,CN4
From 16 TIMER,CN2
To 15 JUNCTION CN2
From 02 REGULATOR CN1
From 04 MECHACON CN 605
From 08 SERVO,CN4
REC LEVEL (L+)
REC LEVEL (R+)
REC LEVEL (L-)
REC LEVEL (R-)
FMA Vcc (SWD 12V)
ALC ON/OFF
PB FM(R)
REC FM
PB FM(L)
SWD 12V
REG 10V
PB 5V
REC 12V
UNSW 12V
MIC AMP
NOR AMP
AGC
HEAD PHONE AMP
HP VOL CTL
L/R SELECT CTL
HI-FI NORMAL SELECT
MUT CTL
A
B
C
D
E
F
G
H
1
2
3
4
5
6

3.21 FM AUDIO CIRCUIT BOARD


R29
IND LEVEL (L)

R5
E-E LEVEL 1 (L)

R33
E-E LEVEL 2(L)

R34
E-E LEVEL 2(R)

R6
E-E LEVEL 1 (R)

R259
PB LEVEL (L)

R250
PB LEVEL (R)

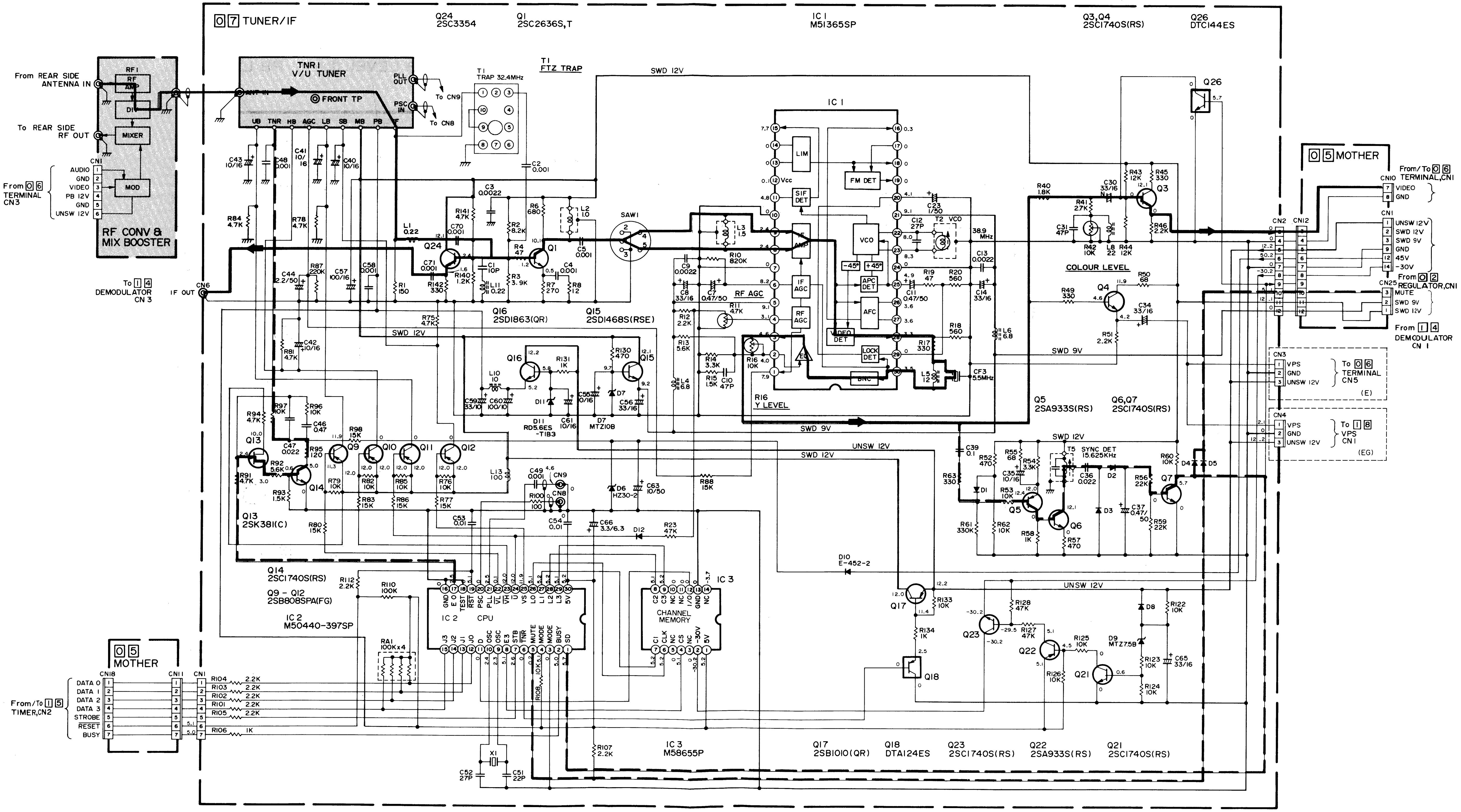
R218
REC FM LEVEL

R30
IND LEVEL (R)

1 3 FM AUDIO PWB ASS'Y PU22346W
FMA PWB
PU22346-1-04
TP201
TP203
TP204
TP205
TP206
IC1
IC2
IC201
IC202
CN1
CN2
CN3
CN4
CN5
CN11
CN12
CN13
CN14
CN15
BPF1
BPF2

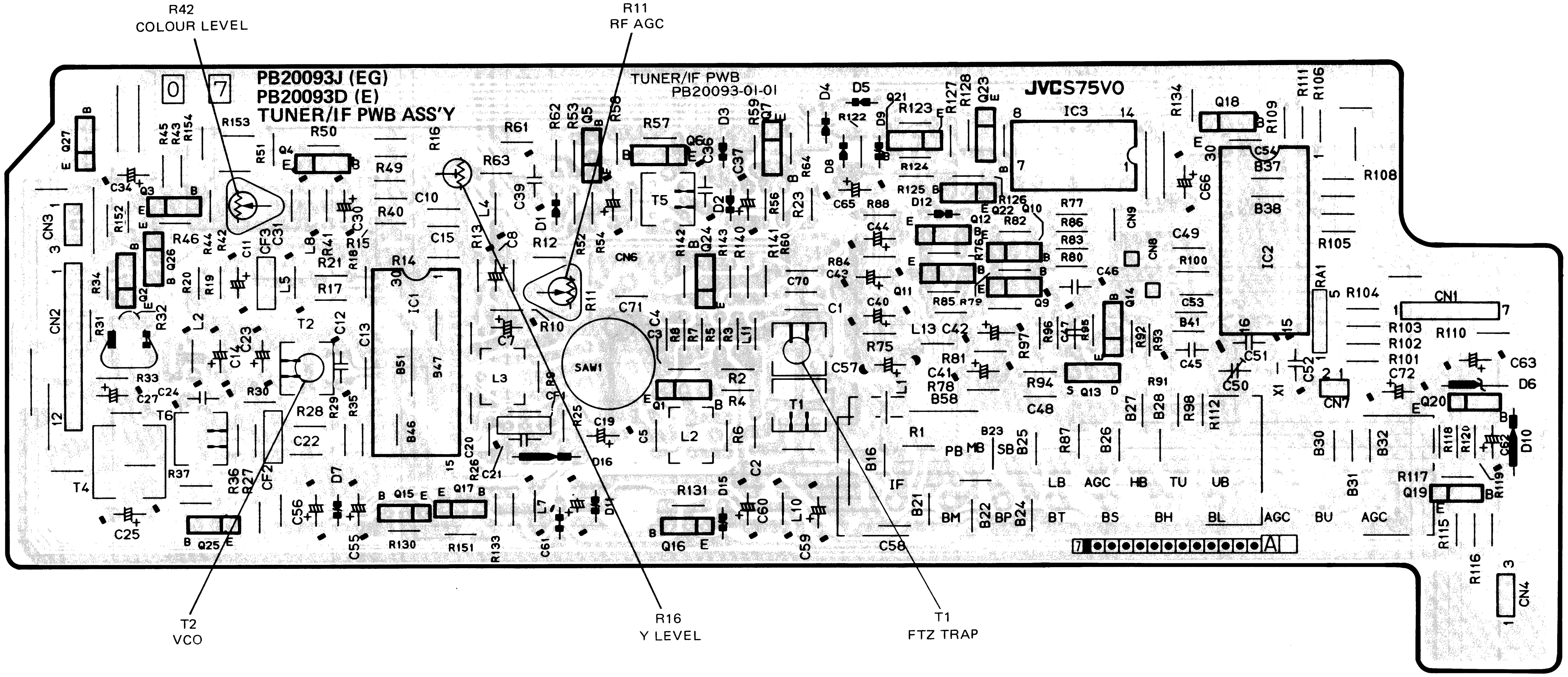
3.22 TUNER/IF SCHEMATIC DIAGRAM

NOTE:
Voltages are DC-measured with a digital voltmeter during stop mode.



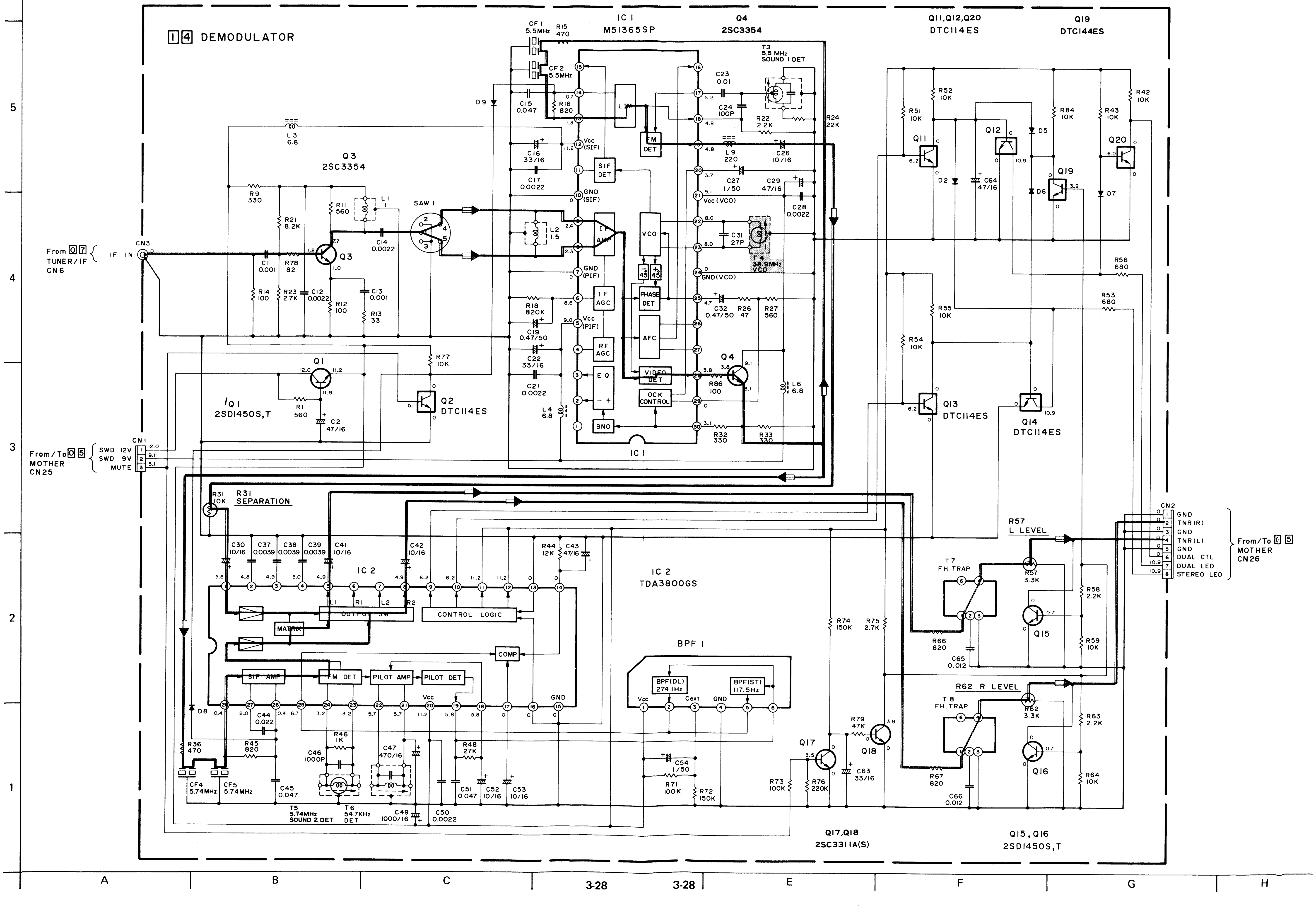
07 TUNER/IF
Q24 2SC3354
Q1 2SC2636S,T
IC1 M51365SP
Q3,Q4 2SC1740S(RS)
Q26 DTC144ES
RF1 RF AMP DIV MIXER MOD
RF CONV & MIX BOOSTER
From REAR SIDE ANTENNA IN
To REAR SIDE RF OUT
From 06 TERMINAL CN3
AUDIO GND VIDEO PB 12V GND UNSW 12V
TNR1 V/U TUNER
FRONT TP
ANT IN
PLL OUT
PSC IN
To CN9
To CN8
UB TNR HB AGC LB SB MB PB IF
T1 TRAP 32.4MHz
T1 FTZ TRAP
SWD 12V
SAW1
IC1
LIM
SIF DET
FM DET
IF AMP
IF AGC
RF AGC
VCO
APC DET
AFC
VIDEO DET
LOCK DET
BNC
T2 VCO
38.9 MHz
CF3 5.5MHz
R16 Y LEVEL
COLOUR LEVEL
To 14 DEMODULATOR CN3
IF OUT
CN6
Q16 2SD1863(QR)
Q15 2SD1468S(RSE)
D11 RD5.6ES -T1B3
D7 MTZ10B
SWD 9V
UNSW 12V
Q13 2SK381(C)
Q14 2SC1740S(RS)
Q9 - Q12 2SB808SPA(FG)
IC2 M50440-397SP
IC2 CPU
IC3 CHANNEL MEMORY
IC3 M58655P
RA1 100Kx4
X1
D6 HZ30-2
D10 E-452-2
05 MOTHER
CN18 CN11 CN1
DATA 0 DATA 1 DATA 2 DATA 3 STROBE RESET BUSY
From/To 15 TIMER,CN2
05 MOTHER
From/To 06 TERMINAL,CN1
CN10 VIDEO GND
CN2 CN12
CN1 UNSW 12V SWD 12V SWD 9V GND 45V -30V
CN25 From 02 REGULATOR,CN1
MUTE SWD 9V SWD 12V
From 14 DEMODULATOR CN1
CN3 VPS GND UNSW 12V
To 06 TERMINAL CN5 (E)
CN4 VPS GND UNSW 12V
To 18 VPS CN1 (EG)
Q5 2SA933S(RS)
Q6,Q7 2SC1740S(RS)
T5 SYNC DET 15.625KHz
Q17 2SB1010(QR)
Q18 DTA124ES
Q23 2SC1740S(RS)
Q22 2SA933S(RS)
Q21 2SC1740S(RS)
D9 MTZ7.5B
A B C D E F G H
1 2 3 4 5 6

3.23 TUNER/IF CIRCUIT BOARD


R42
COLOUR LEVEL
R11
RF AGC
PB20093J (EG)
PB20093D (E)
TUNER/IF PWB ASS'Y
TUNER/IF PWB
PB20093-01-01
JVCS75V0
IC1
IC2
IC3
SAW1
CN1
CN2
CN3
CN4
CN7
T2
VCO
R16
Y LEVEL
T1
FTZ TRAP

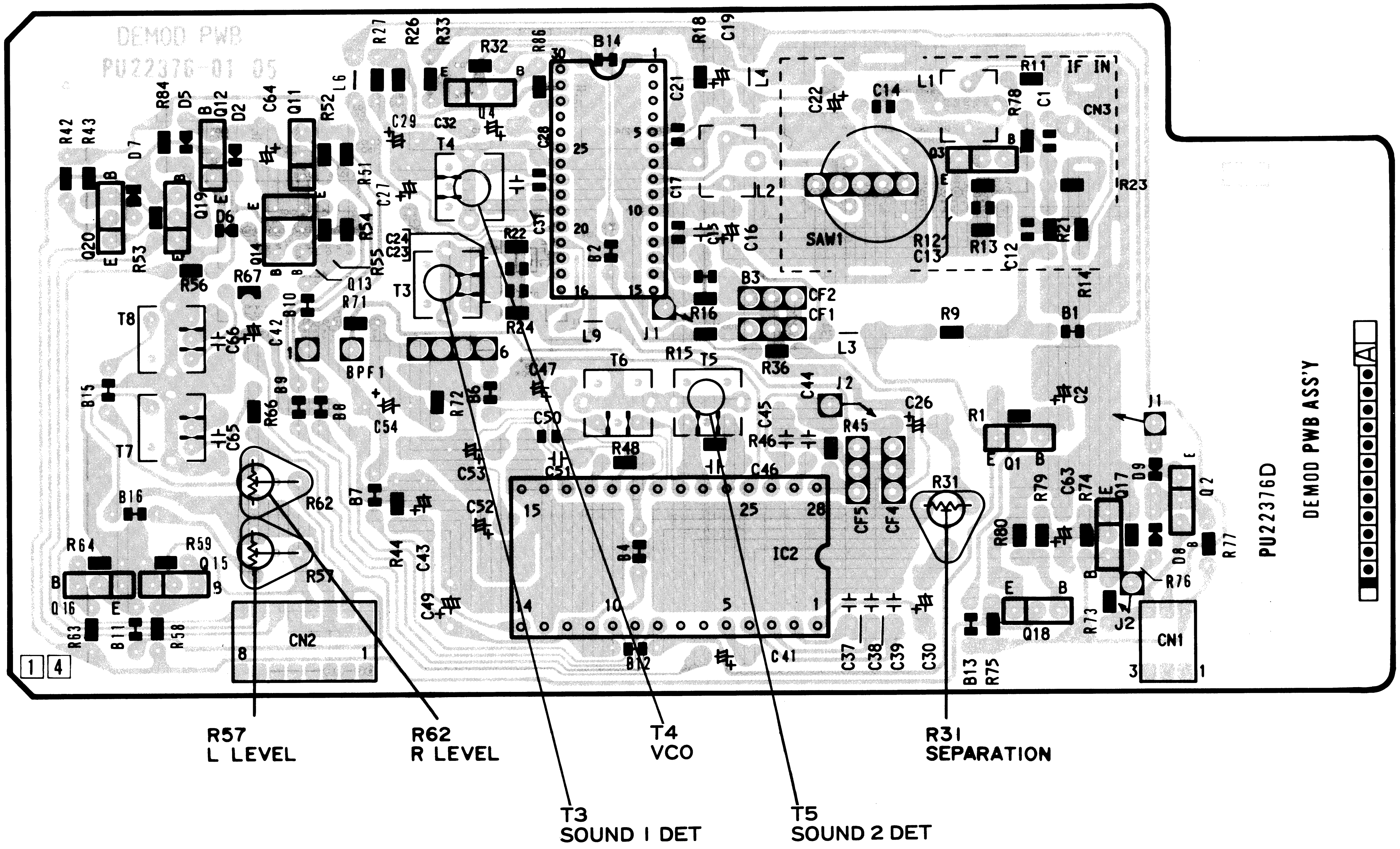
3.24 DEMODULATOR SCHEMATIC DIAGRAM

NOTE:
Voltages are DC-measured with a digital voltmeter during stop mode.



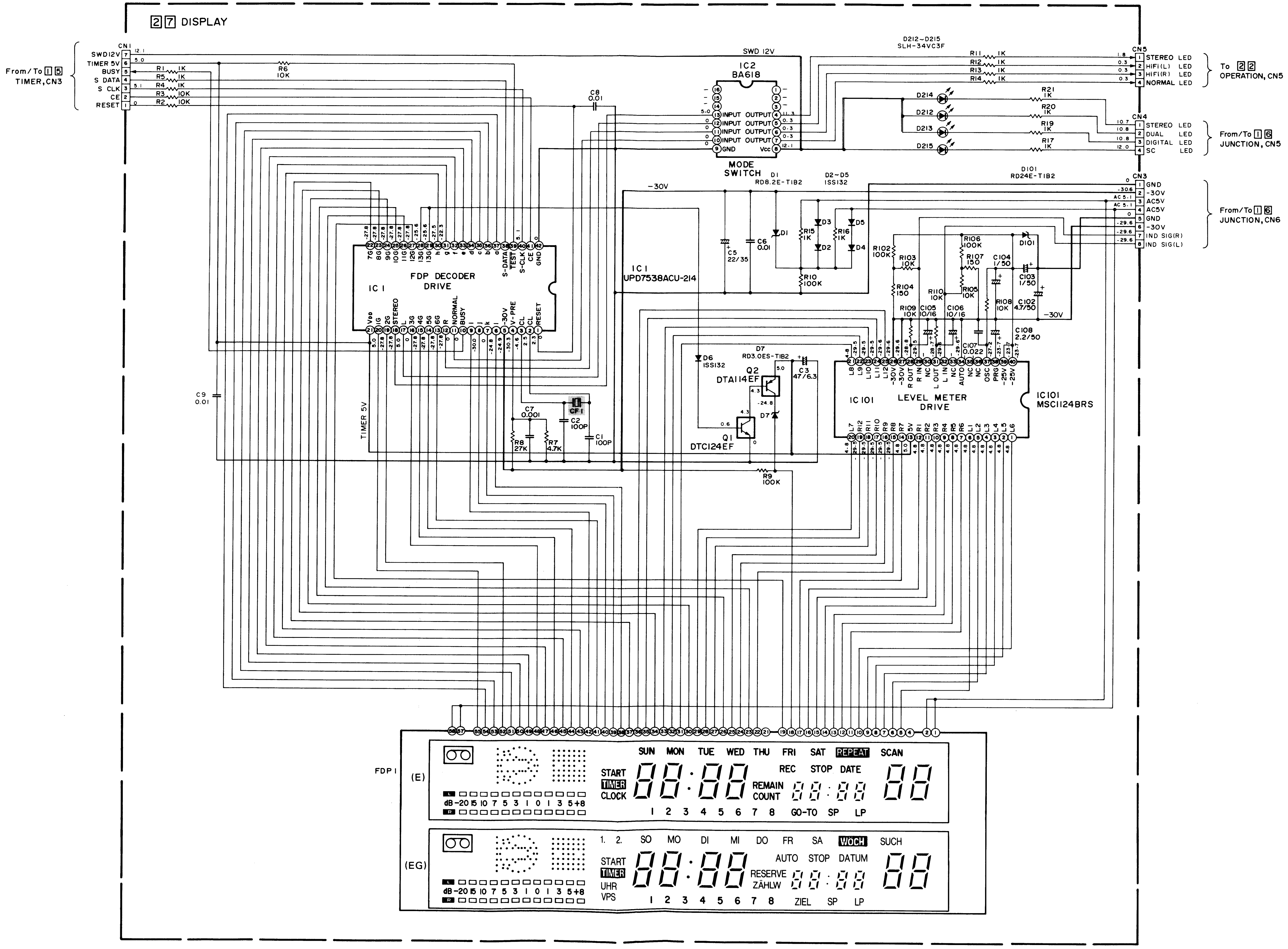
14 DEMODULATOR
IC 1 M51365SP
Q4 2SC3354
Q11,Q12,Q20 DTC114ES
Q19 DTC144ES
CF1 5.5MHz
R15 470
CF2 5.5MHz
T3 5.5 MHz SOUND 1 DET
C23 0.01
C24 100P
R22 2.2K
R24 22K
D9
C15 0.047
R16 820
LIM
FM DET
L3 6.8
Q3 2SC3354
Vcc (SIF)
C16 33/16
SIF DET
C17 0.0022
GND (SIF)
L9 220
C26 10/16
C27 1/50
C29 47/16
Vcc (VCO)
C28 0.0022
R9 330
R21 8.2K
R11 560
L1
SAW 1
L2 1.5
IF AMP
VCO
C31 27P
T4 38.9MHz VCO
GND (VCO)
From 07 TUNER/IF CN6
IF IN
CN3
C1 0.001
R78 82
C14 0.0022
GND (PIF)
PHASE DET
C32 0.47/50
R26 47
R27 560
R14 100
R23 2.7K
C12 0.0022
R12 100
C13 0.001
R13 33
R18 820K
IF AGC
C19 0.47/50
Vcc (PIF)
AFC
C22 33/16
RF AGC
Q4
R77 10K
Q1
R1 560
C2 47/16
Q1 2SD1450S,T
Q2 DTC114ES
C21 0.0022
EQ
VIDEO DET
R86 100
L6 6.8
OCK CONTROL
L4 6.8
BNO
R32 330
R33 330
IC 1
From/To 05 MOTHER CN25
CN1
SWD 12V
SWD 9V
MUTE
R31 10K
R31 SEPARATION
C30 10/16
C37 0.0039
C38 0.0039
C39 0.0039
C41 10/16
C42 10/16
R44 12K
C43 47/16
IC 2
IC 2 TDA3800GS
L1 R1 L2 R2
OUTPUT SW
MATRIX
CONTROL LOGIC
COMP
SIF AMP
FM DET
PILOT AMP
PILOT DET
Vcc
GND
BPF 1
BPF(DL) 274.1Hz
BPF(ST) 117.5Hz
Cext
D8
C44 0.022
R45 820
R46 1K
C46 1000P
C47 470/16
R48 27K
R36 470
CF4 5.74MHz
CF5 5.74MHz
C45 0.047
T5 5.74MHz SOUND 2 DET
T6 54.7KHz DET
C49 1000/16
C50 0.0022
C51 0.047
C52 10/16
C53 10/16
C54 1/50
R71 100K
R72 150K
R73 100K
R76 220K
C63 33/16
Q17
Q18
R79 47K
R74 150K
R75 2.7K
Q17,Q18 2SC3311A(S)
R51 10K
R52 10K
Q11
Q12
D2
C64 47/16
D5
R84 10K
Q19
D6
R43 10K
R42 10K
Q20
D7
R56 680
R53 680
R55 10K
R54 10K
Q13 DTC114ES
Q14 DTC114ES
CN2
GND
TNR(R)
GND
TNR(L)
GND
DUAL CTL
DUAL LED
STEREO LED
From/To 05 MOTHER CN26
R57 L LEVEL
T7 FH.TRAP
R57 3.3K
R58 2.2K
Q15
R59 10K
R66 820
C65 0.012
R62 R LEVEL
T8 FH.TRAP
R62 3.3K
R63 2.2K
Q16
R64 10K
R67 820
C66 0.012
Q15,Q16 2SD1450S,T
A B C D E F G H
1 2 3 4 5 6

3.25 DEMODULATOR CIRCUIT BOARD


DEMOD PWB
PU22376-01 05
DEMOD PWB ASS'Y
PU22376D
IF IN
CN3
SAW1
IC2
CN1
CN2
BPF1
R57
L LEVEL
R62
R LEVEL
T4
VCO
R31
SEPARATION
T3
SOUND I DET
T5
SOUND 2 DET

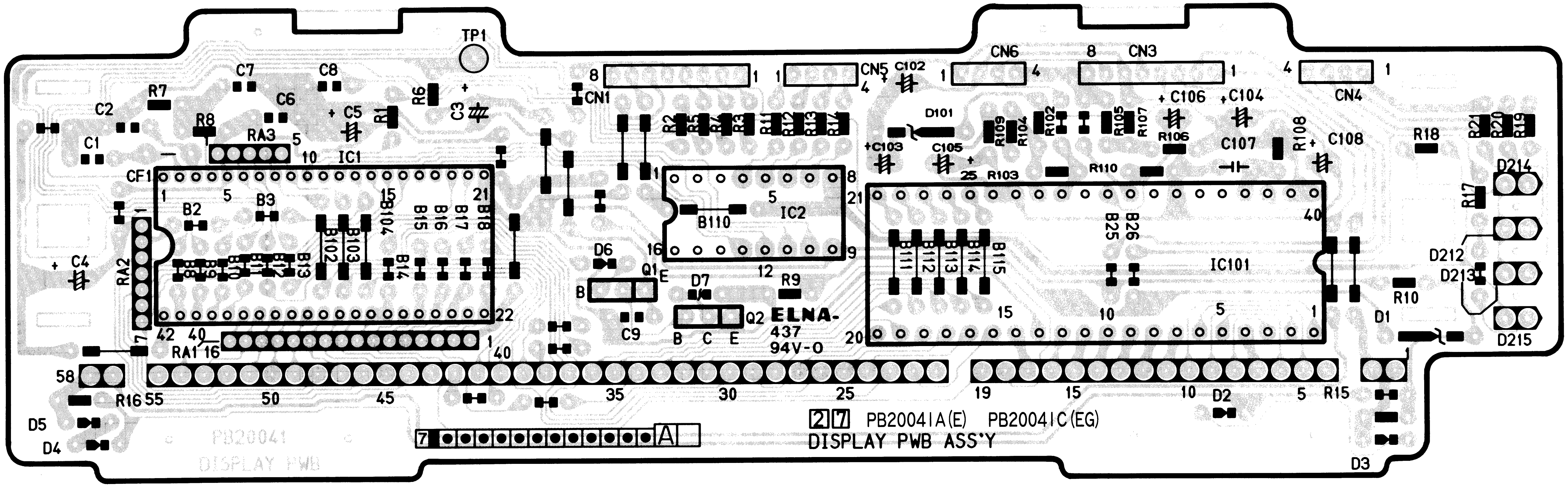
3.26 DISPLAY SCHEMATIC DIAGRAM

NOTE:
Voltages are DC-measured with a digital voltmeter during stop mode.

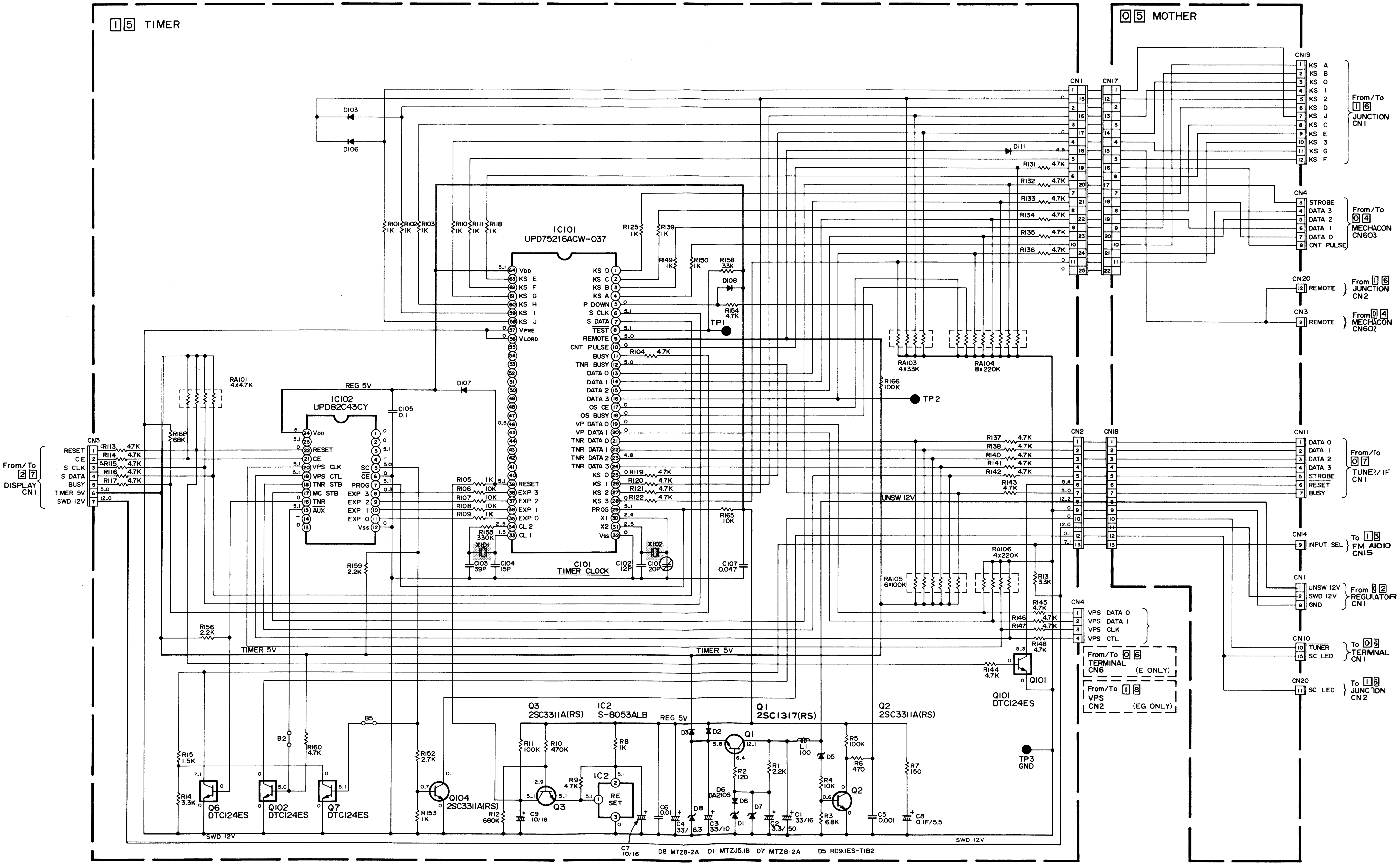


27 DISPLAY
From/To 15 TIMER,CN3
CN1
SWD12V
TIMER 5V
BUSY
S DATA
S CLK
CE
RESET
R1 1K
R5 1K
R4 1K
R3 10K
R2 10K
R6 10K
C8 0.01
C9 0.01
SWD 12V
IC2 BA618
INPUT
OUTPUT
GND
Vcc
MODE SWITCH
D212~D215 SLH-34VC3F
R11 1K
R12 1K
R13 1K
R14 1K
D214
D212
D213
D215
R21 1K
R20 1K
R19 1K
R17 1K
CN5
STEREO LED
HIFI(L) LED
HIFI(R) LED
NORMAL LED
To 22 OPERATION, CN5
CN4
STEREO LED
DUAL LED
DIGITAL LED
SC LED
From/To 16 JUNCTION, CN5
D1 RD8.2E-T1B2
D2~D5 1SS132
D101 RD24E-T1B2
CN3
GND
-30V
AC5V
AC5V
GND
-30V
IND SIG(R)
IND SIG(L)
From/To 16 JUNCTION, CN6
-30V
IC 1
FDP DECODER DRIVE
IC1 UPD7538ACU-214
C5 22/35
C6 0.01
R15 1K
R16 1K
D3
D4
D5
R10 100K
R102 100K
R103 10K
R104 150
R106 100K
R107 150
C104 1/50
C103 1/50
C102 4.7/50
R105 10K
R110 10K
R108 10K
R109 10K
C105 10/16
C106 10/16
C107 0.022
C108 2.2/50
D6 1SS132
D7 RD3.0ES-T1B2
Q2 DTA114EF
C3 47/6.3
Q1 DTC124EF
R9 100K
CF1
C7 0.001
C2 100P
C1 100P
R8 27K
R7 4.7K
TIMER 5V
IC 101
LEVEL METER DRIVE
IC101 MSC1124BRS
FDP1
(E)
SUN MON TUE WED THU FRI SAT REPEAT SCAN
START TIMER CLOCK
REC STOP DATE
REMAIN COUNT
dB -20 15 10 7 5 3 1 0 1 3 5 +8
1 2 3 4 5 6 7 8 GO-TO SP LP
(EG)
1. 2. SO MO DI MI DO FR SA WOCH SUCH
START TIMER UHR VPS
AUTO STOP DATUM
RESERVE ZÄHLW
1 2 3 4 5 6 7 8 ZIEL SP LP

3.27 DISPLAY CIRCUIT BOARD


TP1
C7
C8
R7
C6
R6
C3
C2
R8
C5
R1
C1
RA3
5
10
IC1
CF1
1
5
B2
B3
15
21
B104
B15
B16
B17
B18
B102
B103
B13
B14
C4
RA2
22
42
40
RA1
16
1
40
58
R16
55
50
45
35
30
25
19
15
10
5
R15
D5
D4
PB20041
DISPLAY PWB
7
A
8
1
CN1
CN5
4
C102
CN6
CN3
CN4
R2
R5
R4
R3
R11
R12
R13
R14
IC2
B110
16
9
12
D6
Q1
E
B
D7
R9
C9
Q2
C
ELNA-
437
94V-0
20
21
D101
C103
C105
R109
R104
R102
R105
R107
C106
C104
R106
C107
R108
C108
R103
R110
IC101
B111
B112
B113
B114
B115
B25
B26
R18
R21
R20
R19
D214
R17
D212
D213
R10
D1
D215
D2
D3
2 7 PB20041A(E) PB20041C(EG)
DISPLAY PWB ASS'Y

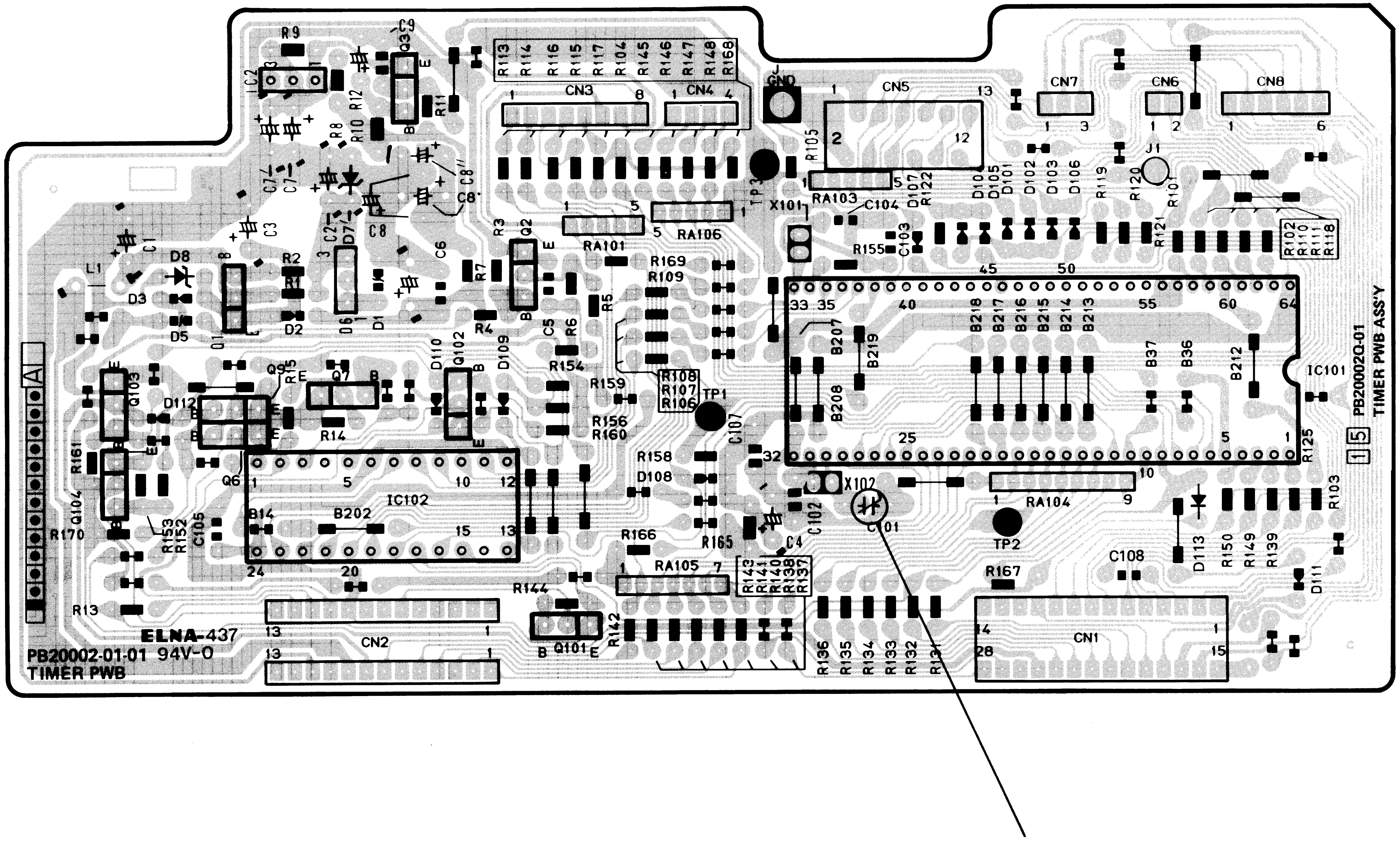
3.28 TIMER SCHEMATIC DIAGRAM



15 TIMER
05 MOTHER
IC101
UPD75216ACW-037
IC102
UPD82C43CY
REG 5V
TIMER 5V
SWD 12V
UNSW 12V
TIMER CLOCK
TP1
TP2
TP3 GND
X101
X102
D103
D106
D107
D108
D111
RA101 4x4.7K
RA103 4x33K
RA104 8x220K
RA105 6x100K
RA106 4x220K
Q1 2SC1317(RS)
Q2 2SC3311A(RS)
Q3 2SC3311A(RS)
IC2 S-8053ALB
Q6 DTC124ES
Q102 DTC124ES
Q7 DTC124ES
Q104 2SC3311A(RS)
Q101 DTC124ES
D8 MTZ8-2A
D1 MTZJ5.1B
D7 MTZ8-2A
D5 RD9.1ES-T1B2
D6 DA210S
CN3
RESET
CE
S CLK
S DATA
BUSY
TIMER 5V
SWD 12V
From/To 27 DISPLAY CN1
CN1
CN17
CN19
KS A
KS B
KS 0
KS 1
KS 2
KS D
KS J
KS C
KS E
KS 3
KS G
KS F
From/To 16 JUNCTION CN1
CN4
STROBE
DATA 3
DATA 2
DATA 1
DATA 0
CNT PULSE
From/To 04 MECHACON CN603
CN20
REMOTE
From 16 JUNCTION CN2
CN3
REMOTE
From 04 MECHACON CN602
CN2
CN18
CN11
DATA 0
DATA 1
DATA 2
DATA 3
STROBE
RESET
BUSY
From/To 07 TUNER/IF CN1
CN14
INPUT SEL
To 13 FM AUDIO CN15
CN1
UNSW 12V
SWD 12V
GND
From 12 REGULATOR CN1
CN10
TUNER
SC LED
To 09 TERMINAL CN1
CN20
SC LED
To 16 JUNCTION CN2
CN4
VPS DATA 0
VPS DATA 1
VPS CLK
VPS CTL
From/To 06 TERMINAL CN6 (E ONLY)
From/To 18 VPS CN2 (EG ONLY)

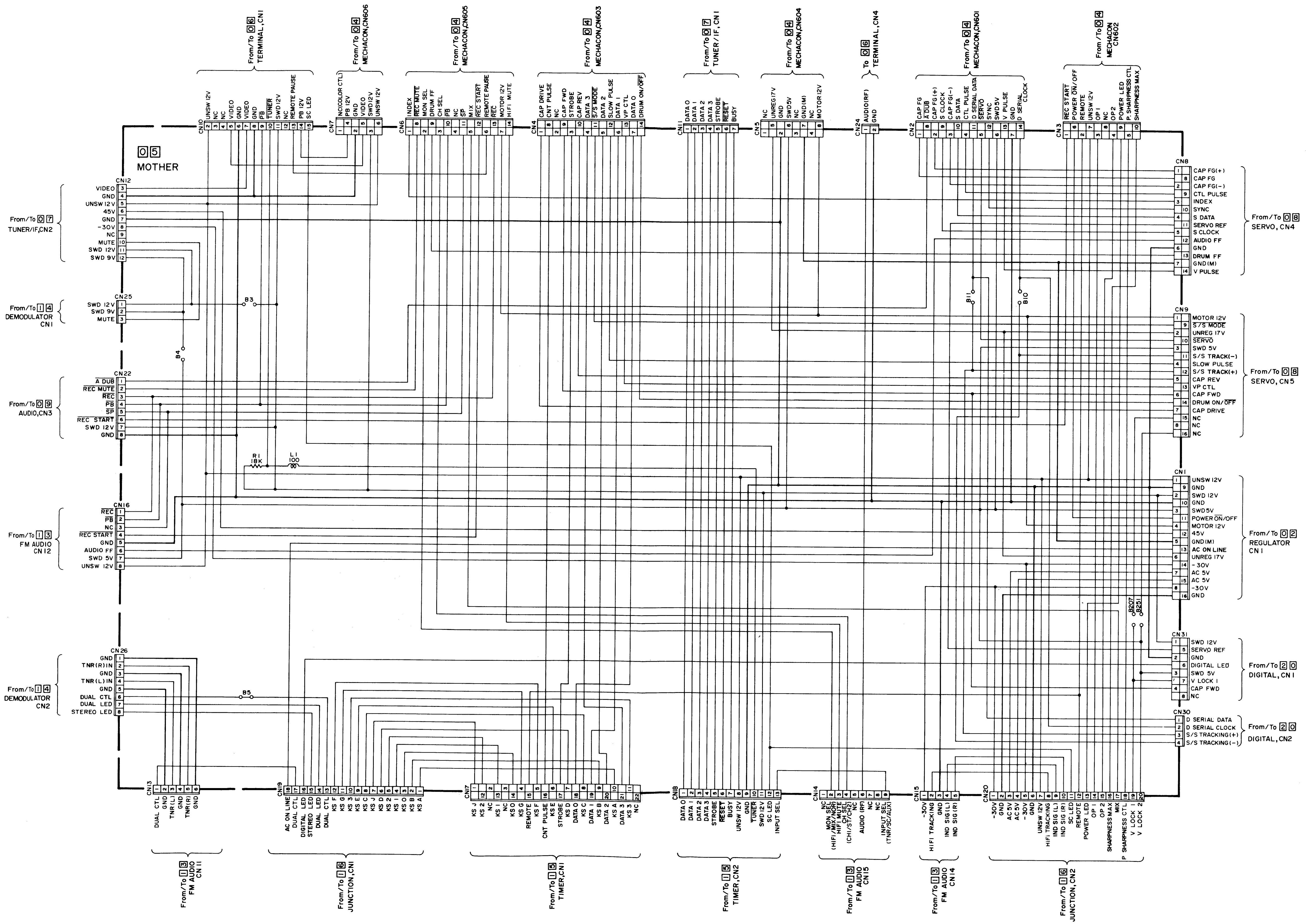
NOTE:
Voltages are DC-measured with a digital voltmeter during stop mode.

3.29 TIMER CIRCUIT BOARD


R9
C9
Q3
IC2
R12
R10
R8
R11
R13
R14
R16
R15
R17
R104
R145
R146
R147
R148
R168
CN3
CN4
GND
CN5
CN7
CN6
CN8
J1
R105
TP3
RA103
D107
R122
D105
D101
D102
D103
D106
R119
R120
R101
C7
C8
C3
C1
C2
D7
D8
L1
D3
D5
Q1
R2
R1
D2
D6
D1
C6
R3
Q2
R7
R4
C5
R6
R5
RA101
RA106
X101
C104
R155
C103
R121
R102
R110
R111
R118
R169
R109
D110
Q102
D109
R154
R159
R108
R107
R106
TP1
R156
R160
C107
Q103
Q9
Q7
R15
D112
Q6
R14
B219
B207
B208
B218
B217
B216
B215
B214
B213
B37
B36
B212
IC101
PB20002O-01
TIMER PWB ASS'Y
R125
R161
Q104
R170
R153
R152
C105
IC102
B14
B202
R158
D108
R166
R165
C4
X102
C102
C101
RA104
TP2
R167
C108
D113
R150
R149
R139
R103
D111
RA105
R143
R141
R140
R138
R137
R144
Q101
R142
R13
ELNA-437
94V-0
PB20002-01-01
TIMER PWB
CN2
R136
R135
R134
R133
R132
R131
CN1

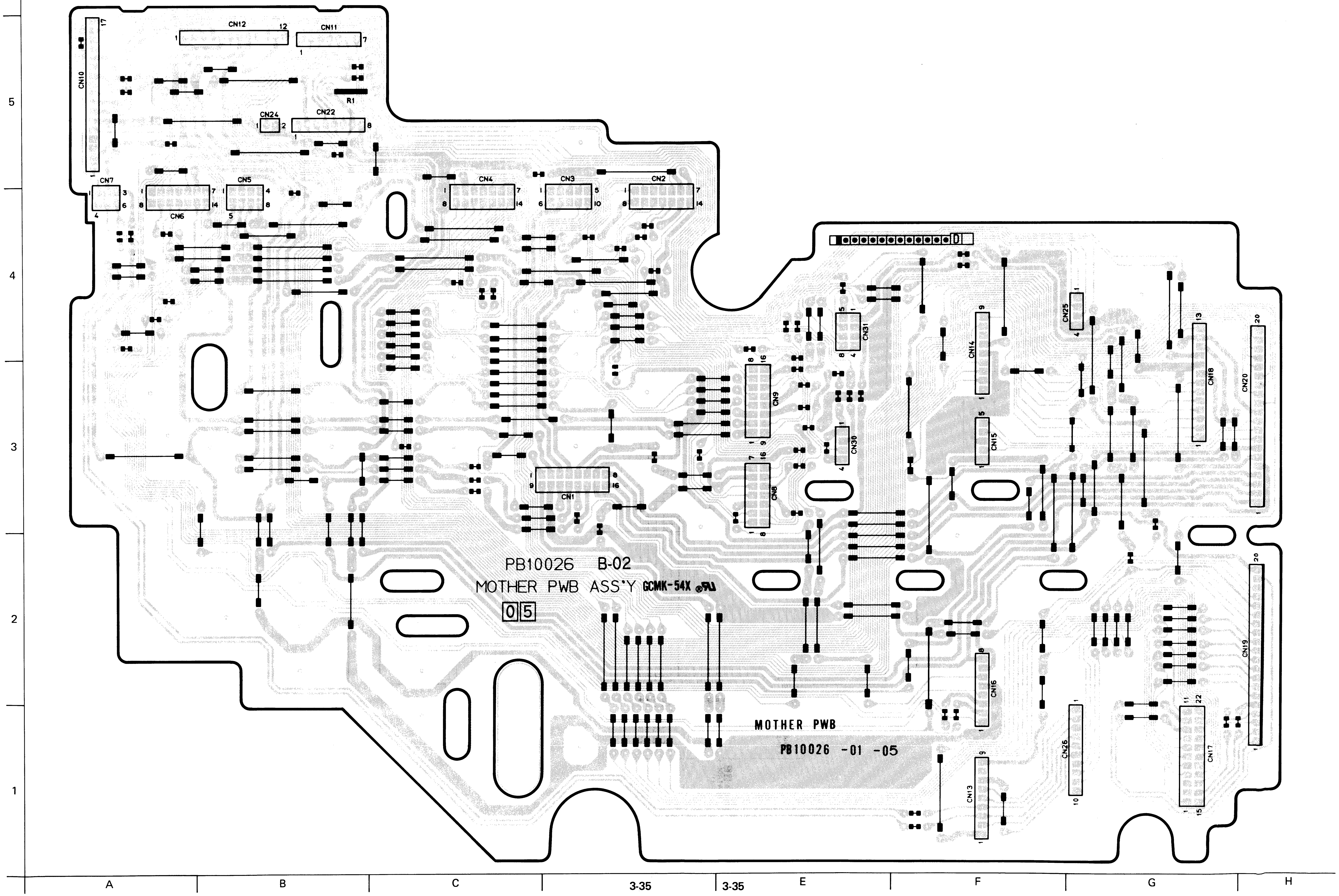
C101
TIMER CLOCK

3.30 MOTHER SCHEMATIC DIAGRAM



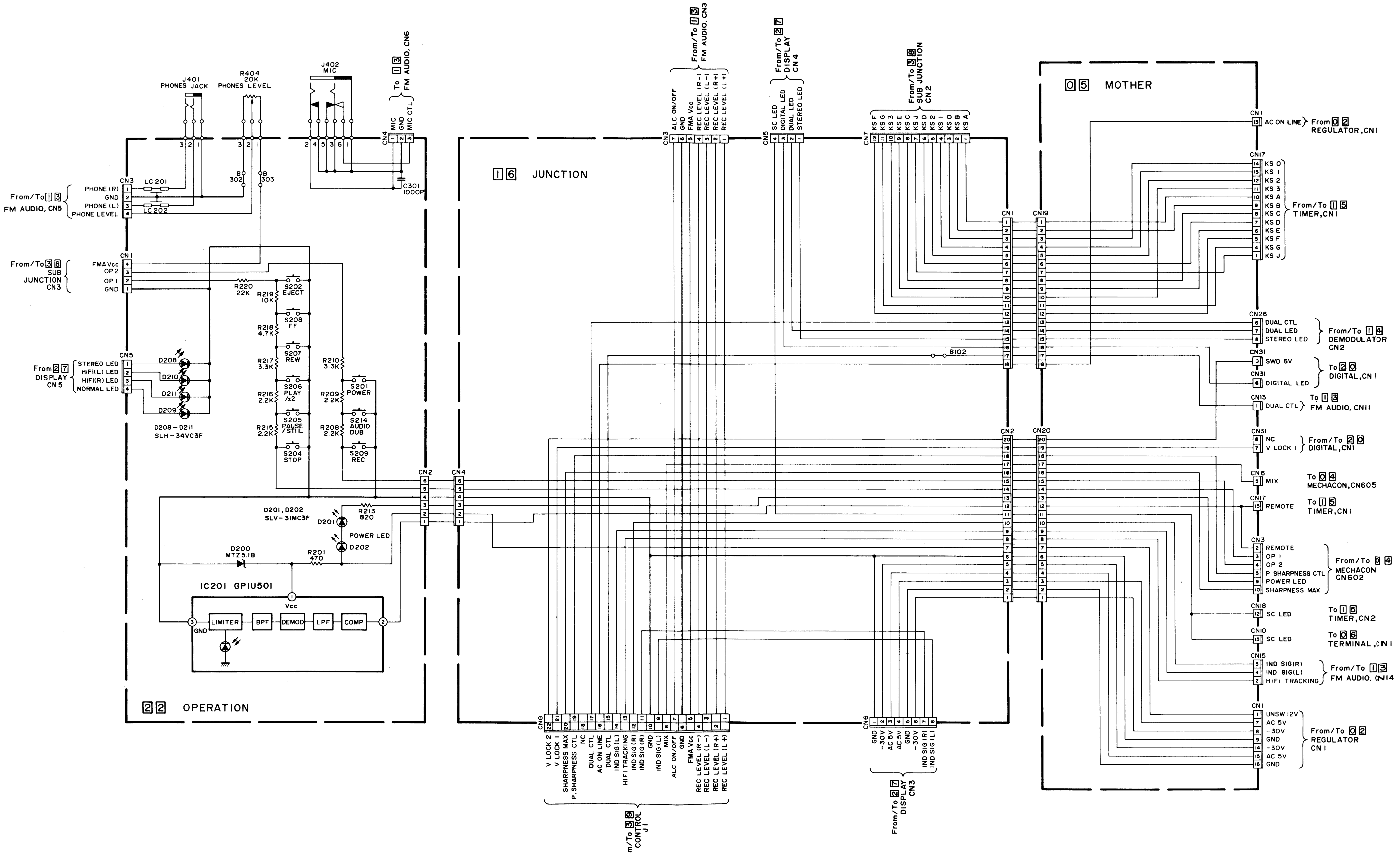
05 MOTHER
From/To 06 TERMINAL, CN1
CN10: UNSW 12V, NC, NC, VIDEO, GND, VIDEO, GND, PB, TUNER, SWD 12V, NC, REMOTE PAUSE, PB 12V, SC LED
From/To 04 MECHACON, CN606
CN7: NC(COLOR CTL), PB 12V, GND, VIDEO, SWD12V, UNSW 12V
From/To 04 MECHACON, CN605
CN6: INDEX, REC MUTE, MON SEL, DRUM FF, CH SEL, PB, NC, SP, MIX, REC START, REMOTE PAUSE, REC, MOTOR 12V, HIFI MUTE
From/To 04 MECHACON, CN603
CN4: CAP DRIVE, CNT PULSE, NC, CAP FWD, STROBE, CAP REV, DATA 3, S/S MODE, DATA 2, SLOW PULSE, DATA 1, VP CTL, DATA 0, DRUM ON/OFF
From/To 07 TUNER/IF, CN1
CN11: DATA 0, DATA 1, DATA 2, DATA 3, STROBE, RESET, BUSY
From/To 04 MECHACON, CN604
CN5: NC, UNREG 17V, GND, SWD5V, NC, GND(M), NC, MOTOR 12V
To 06 TERMINAL, CN4
CN24: AUDIO(RF), GND
From/To 04 MECHACON, CN601
CN2: CAP FG, A DUB, CAP FG(+), S CLOCK, CAP FG(−), S DATA, CTL PULSE, D SERIAL DATA, SERVO, SWD5V, SYNC, V PULSE, GND, D SERIAL CLOCK
From/To 04 MECHACON CN602
CN3: REC START, POWER ON/OFF, REMOTE, UNSW 12V, OP 1, NC, OP 2, POWER LED, P. SHARPNESS CTL, SHARPNESS MAX
From/To 07 TUNER/IF, CN2
CN12: VIDEO, GND, UNSW 12V, 45V, GND, −30V, NC, MUTE, SWD 12V, SWD 9V
From/To 14 DEMODULATOR CN1
CN25: SWD 12V, SWD 9V, MUTE
B3
B4
From/To 09 AUDIO, CN3
CN22: A DUB, REC MUTE, REC, PB, SP, REC START, SWD 12V, GND
R1 18K
L1 100
From/To 13 FM AUDIO CN12
CN16: REC, PB, NC, REC START, GND, AUDIO FF, SWD 5V, UNSW 12V
From/To 14 DEMODULATOR CN2
CN26: GND, TNR(R)IN, GND, TNR(L)IN, GND, DUAL CTL, DUAL LED, STEREO LED
B5
From/To 08 SERVO, CN4
CN8: CAP FG(+), CAP FG, CAP FG(−), CTL PULSE, INDEX, SYNC, S DATA, SERVO REF, S CLOCK, AUDIO FF, GND, DRUM FF, GND(M), V PULSE
B11
B10
From/To 08 SERVO, CN5
CN9: MOTOR 12V, S/S MODE, UNREG 17V, SERVO, SWD 5V, S/S TRACK(−), SLOW PULSE, S/S TRACK(+), CAP REV, VP CTL, CAP FWD, DRUM ON/OFF, CAP DRIVE, NC, NC, NC
From/To 02 REGULATOR CN1
CN1: UNSW 12V, GND, SWD 12V, GND, SWD5V, POWER ON/OFF, MOTOR 12V, 45V, GND(M), AC ON LINE, UNREG 17V, −30V, AC 5V, AC 5V, −30V, GND
B207
B251
From/To 20 DIGITAL, CN1
CN31: SWD 12V, SERVO REF, GND, DIGITAL LED, SWD 5V, V LOCK 1, CAP FWD, NC
From/To 20 DIGITAL, CN2
CN30: D SERIAL DATA, D SERIAL CLOCK, S/S TRACKING(+), S/S TRACKING(−)
From/To 13 FM AUDIO CN11
CN13: DUAL CTL, GND, TNR(L), GND, TNR(R), GND
From/To 16 JUNCTION, CN1
CN19: AC ON LINE, DUAL CTL, DIGITAL LED, STEREO LED, DUAL LED, DUAL CTL, KS F, KS G, KS 3, KS E, KS C, KS J, KS D, KS 2, KS 1, KS O, KS B, KS A
From/To 15 TIMER, CN1
CN17: KS J, KS 2, NC, KS 1, NC, KS O, KS G, REMOTE, KS F, KS E, CNT PULSE, STROBE, KS D, DATA 0, KS C, DATA 1, KS B, DATA 2, KS A, DATA 3, KS 3, NC
From/To 15 TIMER, CN2
CN18: DATA 0, DATA 1, DATA 2, DATA 3, STROBE, RESET, BUSY, UNSW 12V, GND, TUNER, SWD 12V, SC LED, INPUT SEL
From/To 13 FM AUDIO CN15
CN14: NC, MON SEL (HIFI/MIX/NOR), HIFI MUTE, CH SEL (CH1/ST/CH2), NC, AUDIO (RF), NC, NC, INPUT SEL (TNR/SC/AUX)
From/To 13 FM AUDIO CN14
CN15: −30V, HIFI TRACKING, GND, IND SIG (L), IND SIG (R)
From/To 16 JUNCTION, CN2
CN20: −30V, GND, AC5V, AC5V, −30V, GND, UNSW 12V, HIFI TRACKING, IND SIG (L), IND SIG (R), SC LED, REMOTE, POWER LED, OP 1, OP 2, SHARPNESS MAX, MIX, P. SHARPNESS CTL, V LOCK 1, V LOCK 2
A
B
C
E
F
G
H
1
2
3
4
5
6

3.31 MOTHER CIRCUIT BOARD



CN10
CN12
CN11
R1
CN24
CN22
CN7
CN6
CN5
CN4
CN3
CN2
CN31
CN25
CN14
CN18
CN20
CN9
CN30
CN15
CN8
CN1
CN16
CN26
CN17
CN19
CN13
PB10026 B-02
MOTHER PWB ASS'Y GCMK-54X
05
MOTHER PWB
PB10026 -01 -05
6
5
4
3
2
1
A
B
C
E
F
G
H

3.32 JUNCTION AND OPERATION SCHEMATIC DIAGRAMS

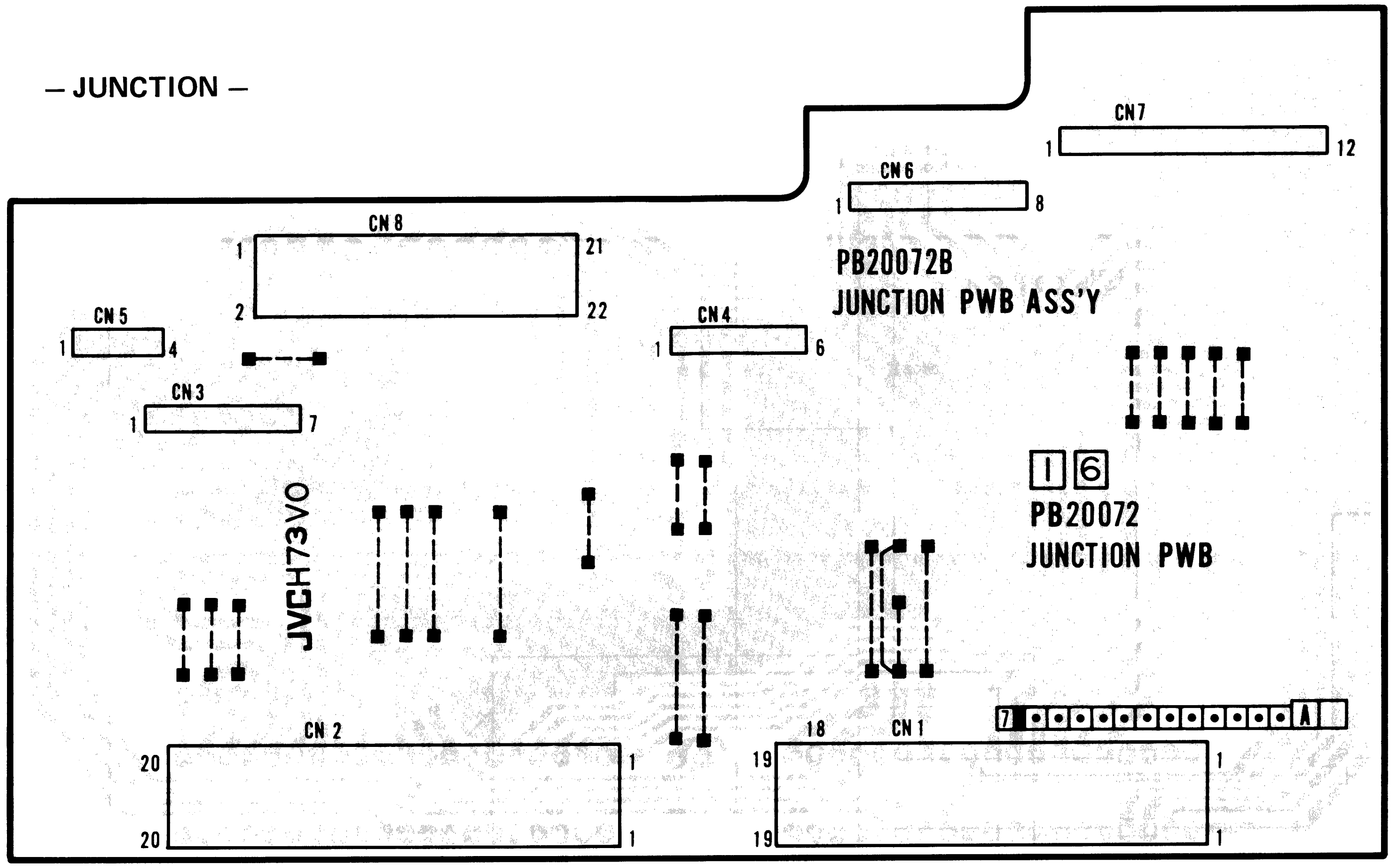

J401
PHONES JACK
R404
20K
PHONES LEVEL
J402
MIC
To 13
FM AUDIO, CN6
MIC
GND
MIC CTL
CN4
From/To 13
FM AUDIO, CN5
CN3
PHONE (R)
GND
PHONE (L)
PHONE LEVEL
LC 201
LC 202
B 302
B 303
C301
1000P
From/To 38
SUB JUNCTION
CN3
CN1
FMA Vcc
OP 2
OP 1
GND
R220
22K
R219
10K
S202
EJECT
S208
FF
R218
4.7K
S207
REW
R217
3.3K
S206
PLAY
/x2
R216
2.2K
S205
PAUSE
/STILL
R215
2.2K
S204
STOP
R210
3.3K
S201
POWER
R209
2.2K
S214
AUDIO
DUB
R208
2.2K
S209
REC
From 27
DISPLAY
CN5
CN5
STEREO LED
HiFi(L) LED
HiFi(R) LED
NORMAL LED
D208
D210
D211
D209
D208 – D211
SLH-34VC3F
D201, D202
SLV-31MC3F
D201
R213
820
POWER LED
D202
D200
MTZ5.1B
R201
470
CN2
CN4
IC201 GP1U501
Vcc
LIMITER
BPF
DEMOD
LPF
COMP
GND
22 OPERATION
16 JUNCTION
From/To 13
FM AUDIO, CN3
CN3
ALC ON/OFF
GND
FMA Vcc
REC LEVEL (R–)
REC LEVEL (L–)
REC LEVEL (R+)
REC LEVEL (L+)
From/To 27
DISPLAY
CN4
CN5
SC LED
DIGITAL LED
DUAL LED
STEREO LED
From/To 38
SUB JUNCTION
CN2
CN7
KS F
KS G
KS 3
KS E
KS C
KS J
KS D
KS 2
KS 1
KS 0
KS B
KS A
CN1
CN19
B102
CN2
CN20
CN8
V LOCK 2
V LOCK 1
SHARPNESS MAX
P. SHARPNESS CTL
NC
DUAL CTL
AC ON LINE
DUAL CTL
IND SIG (L)
HiFi TRACKING
IND SIG (R)
IND SIG (R)
GND
IND SIG (L)
MIX
ALC ON/OFF
GND
FMA Vcc
REC LEVEL (R–)
REC LEVEL (L–)
REC LEVEL (R+)
REC LEVEL (L+)
From/To 39
CONTROL
J1
CN6
GND
–30V
AC 5V
AC 5V
GND
–30V
IND SIG (R)
IND SIG (L)
From/To 27
DISPLAY
CN3
05 MOTHER
CN1
AC ON LINE
From 02
REGULATOR, CN1
CN17
KS 0
KS 1
KS 2
KS 3
KS A
KS B
KS C
KS D
KS E
KS F
KS G
KS J
From/To 15
TIMER, CN1
CN26
DUAL CTL
DUAL LED
STEREO LED
From/To 14
DEMODULATOR
CN2
CN31
SWD 5V
CN31
DIGITAL LED
To 20
DIGITAL, CN1
CN13
DUAL CTL
To 13
FM AUDIO, CN11
CN31
NC
V LOCK 1
From/To 20
DIGITAL, CN1
CN6
MIX
To 04
MECHACON, CN605
CN17
REMOTE
To 15
TIMER, CN1
CN3
REMOTE
OP 1
OP 2
P SHARPNESS CTL
POWER LED
SHARPNESS MAX
From/To 04
MECHACON
CN602
CN18
SC LED
To 15
TIMER, CN2
CN10
SC LED
To 06
TERMINAL, CN1
CN15
IND SIG(R)
IND SIG(L)
HiFi TRACKING
From/To 13
FM AUDIO, CN14
CN1
UNSW 12V
AC 5V
–30V
GND
–30V
AC 5V
GND
From/To 02
REGULATOR
CN1

6
5
4
3
2
1

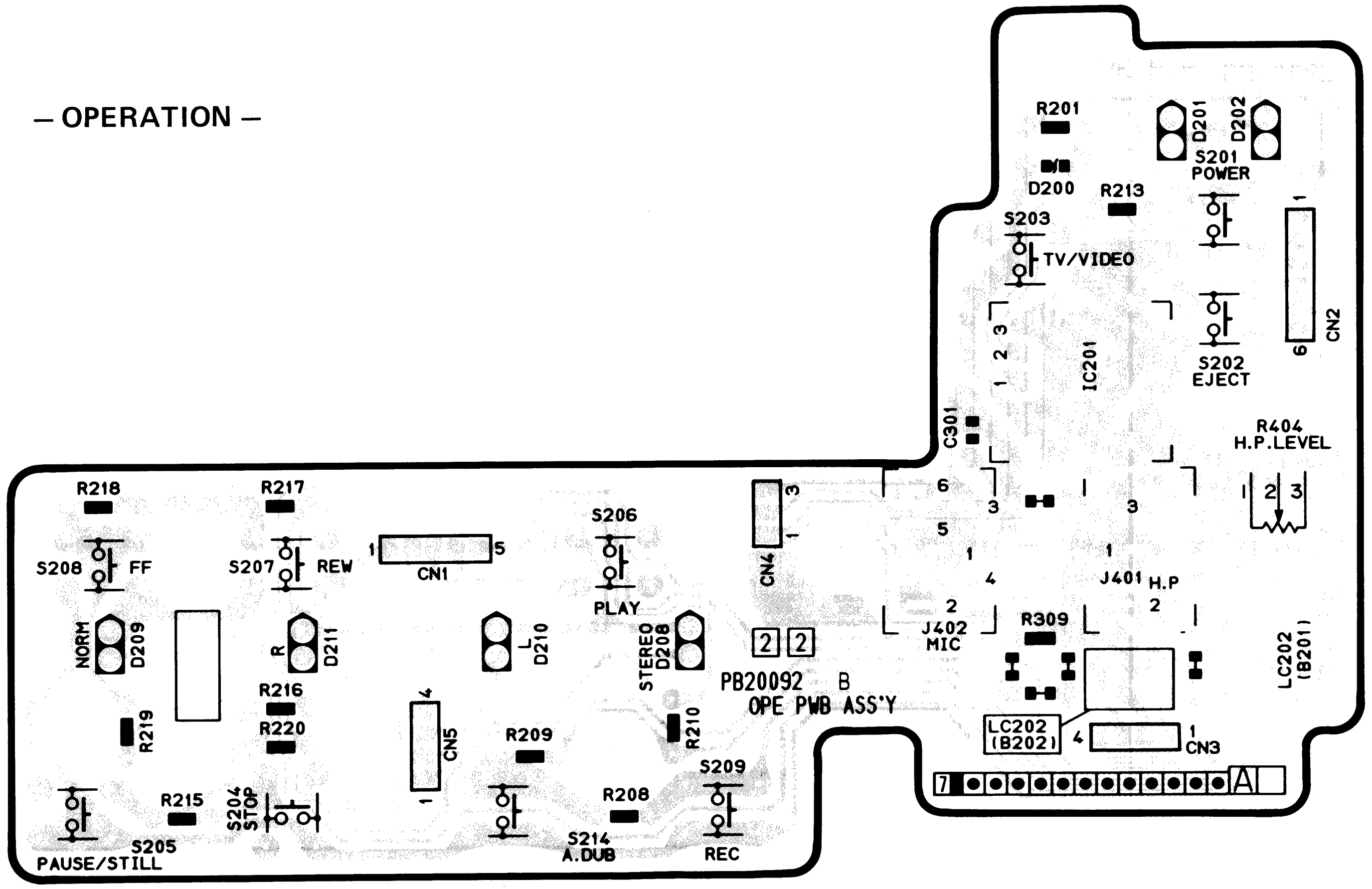
A B C D E F G H

3.33 JUNCTION AND OPERATION CIRCUIT BOARDS

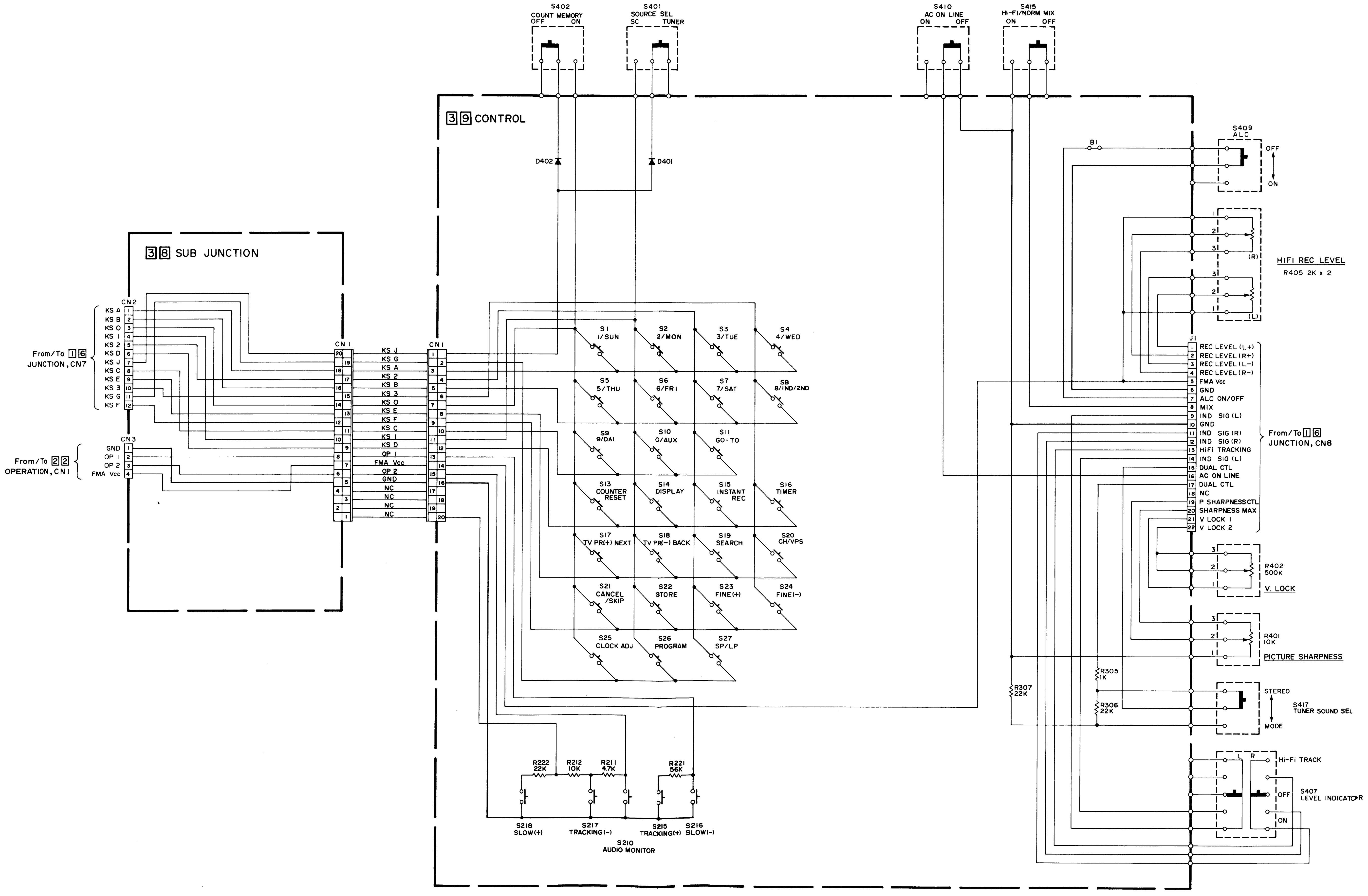
— JUNCTION —


CN7
1
12
CN6
1
8
CN8
1
21
2
22
CN5
1
4
CN4
1
6
CN3
1
7
PB20072B
JUNCTION PWB ASS'Y
16
PB20072
JUNCTION PWB
JVCH73V0
7
A
CN 2
20
20
1
1
CN 1
18
19
19
1
1

— OPERATION —


R201
D201
D202
S201
POWER
D200
R213
S203
TV/VIDEO
1
6
CN2
IC201
S202
EJECT
C301
R404
H.P.LEVEL
1 2 3
R218
R217
S206
S208
FF
S207
REW
CN1
1
5
CN4
3
1
PLAY
NORM
D209
R
D211
L
D210
STEREO
D208
6
5
3
1
4
2
J402
MIC
3
1
J401 H.P
2
R309
LC202
(B201)
22
PB20092 B
OPE PWB ASS'Y
R216
R220
R219
CN5
4
1
R209
R210
LC202
(B202)
4
1
CN3
7
A
R215
S204
STOP
S205
PAUSE/STILL
R208
S209
S214
A.DUB
REC

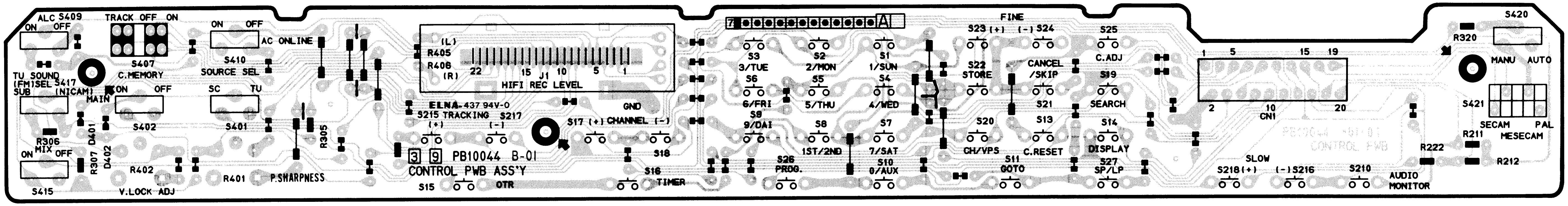
3.34 CONTROL AND SUB JUNCTION SCHEMATIC DIAGRAMS



S402
COUNT MEMORY
OFF ON
S401
SOURCE SEL
SC TUNER
S410
AC ON LINE
ON OFF
S415
HI-FI/NORM MIX
ON OFF
3 9 CONTROL
D402
D401
B1
S409
ALC
OFF
ON
HIFI REC LEVEL
R405 2K x 2
(R)
(L)
3 8 SUB JUNCTION
CN2
KS A 1
KS B 2
KS O 3
KS I 4
KS 2 5
KS D 6
KS J 7
KS C 8
KS E 9
KS 3 10
KS G 11
KS F 12
From/To 1 6 JUNCTION, CN7
CN3
GND 1
OP 1 2
OP 2 3
FMA Vcc 4
From/To 2 2 OPERATION, CN1
CN 1
CN1
KS J
KS G
KS A
KS 2
KS B
KS 3
KS O
KS E
KS F
KS C
KS I
KS D
OP 1
FMA Vcc
OP 2
GND
NC
NC
NC
NC
S1 1/SUN
S2 2/MON
S3 3/TUE
S4 4/WED
S5 5/THU
S6 6/FRI
S7 7/SAT
S8 8/IND/2ND
S9 9/DAI
S10 0/AUX
S11 GO-TO
S13 COUNTER RESET
S14 DISPLAY
S15 INSTANT REC
S16 TIMER
S17 TV PR(+) NEXT
S18 TV PR(-) BACK
S19 SEARCH
S20 CH/VPS
S21 CANCEL /SKIP
S22 STORE
S23 FINE(+)
S24 FINE(-)
S25 CLOCK ADJ
S26 PROGRAM
S27 SP/LP
R222 22K
R212 10K
R211 4.7K
R221 56K
S218 SLOW(+)
S217 TRACKING(-)
S215 TRACKING(+)
S216 SLOW(-)
S210 AUDIO MONITOR
J1
1 REC LEVEL (L+)
2 REC LEVEL (R+)
3 REC LEVEL (L-)
4 REC LEVEL (R-)
5 FMA Vcc
6 GND
7 ALC ON/OFF
8 MIX
9 IND SIG (L)
10 GND
11 IND SIG (R)
12 IND SIG (R)
13 HiFi TRACKING
14 IND SIG (L)
15 DUAL CTL
16 AC ON LINE
17 DUAL CTL
18 NC
19 P SHARPNESS CTL
20 SHARPNESS MAX
21 V LOCK 1
22 V LOCK 2
From/To 1 6 JUNCTION, CN8
R402 500K
V. LOCK
R401 10K
PICTURE SHARPNESS
R307 22K
R305 1K
R306 22K
STEREO
MODE
S417 TUNER SOUND SEL
L R
Hi-Fi TRACK
OFF
ON
S407 LEVEL INDICATOR
6
5
4
3
2
1
A
B
C
E
F
G
H

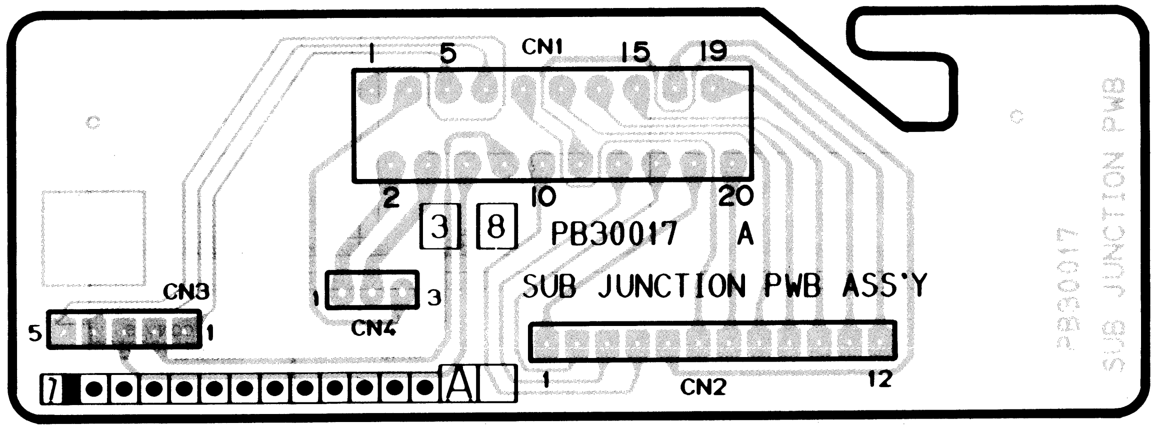
3.35 CONTROL AND SUB JUNCTION CIRCUIT BOARDS

– CONTROL –



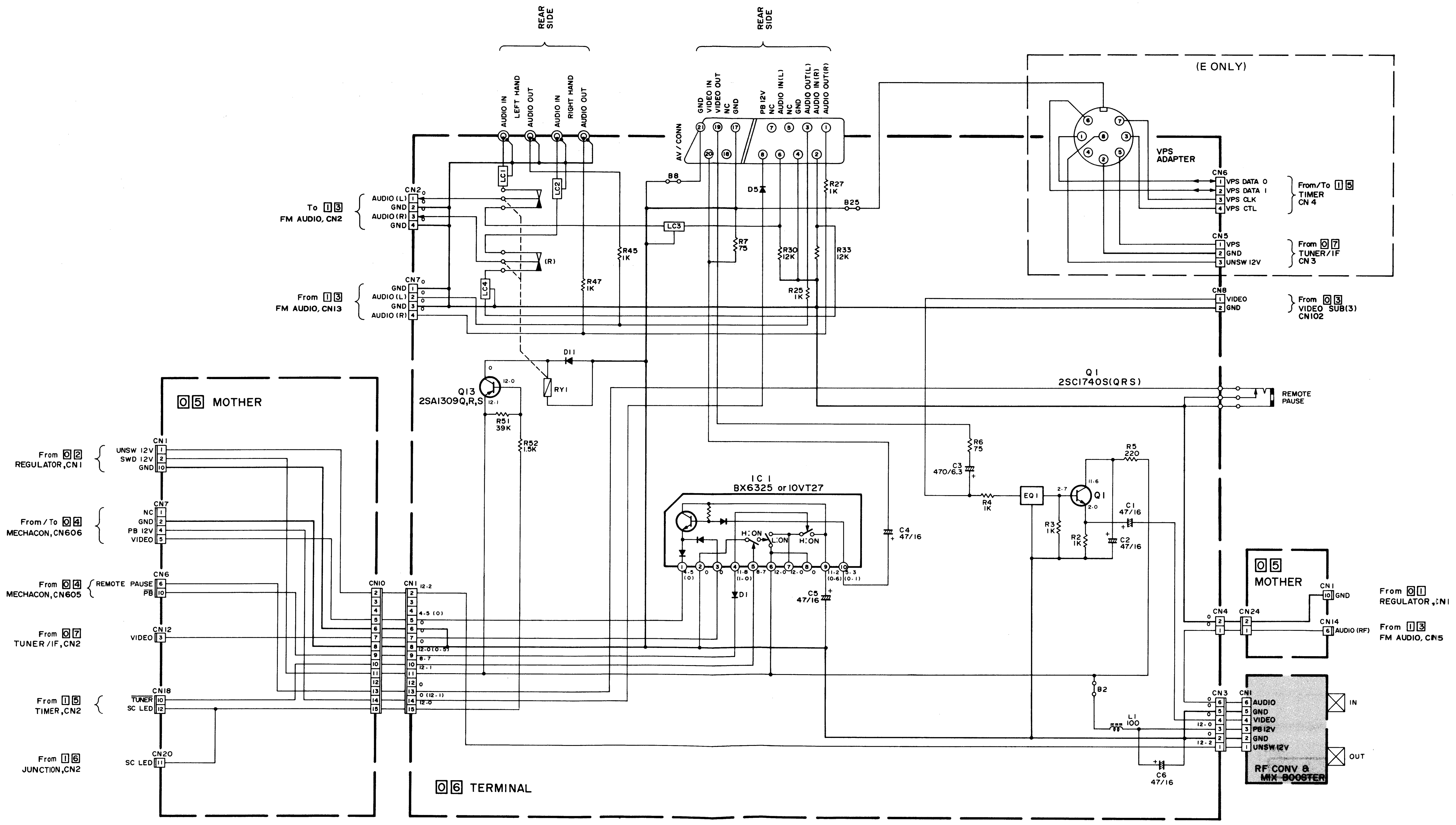
ALC S409 ON OFF
TRACK OFF ON
S407 C.MEMORY
ON OFF AC ONLINE
S410 SOURCE SEL
SC TU S401
TU SOUND (FM)SEL S417 SUB (NICAM) MAIN
ON OFF S402
R306 MIX ON OFF S415
D401 D402 R307 R402 V.LOCK ADJ
R401 P.SHARPNESS R305
(L) R405 R406 (R) 22 15 J1 10 5 1 HIFI REC LEVEL
ELNA 437 94V-0
S215 TRACKING S217 (+) (-)
3 9 PB10044 B-01 CONTROL PWB ASS'Y
S15 OTR
GND S17 (+) CHANNEL (-) S18
S16 TIMER
S3 3/TUE S2 2/MON S1 1/SUN
S6 6/FRI S5 5/THU S4 4/WED
S9 9/DAI S8 1ST/2ND S7 7/SAT
S26 PROG. S10 0/AUX
FINE S23 (+) (-) S24
S22 STORE CANCEL /SKIP
S20 CH/VPS S21 S13 C.RESET
S11 GOTO
S25 C.ADJ S19 SEARCH S14 DISPLAY S27 SP/LP
1 5 15 19 2 10 CN1 20
SLOW S218 (+) (-) S216 S210 AUDIO MONITOR
S420 R320 MANU AUTO
S421 SECAM PAL MESECAM
R211 R212 R222

– SUB JUNCTION –



1 5 CN1 15 19
2 10 20
3 8 PB30017 A
SUB JUNCTION PWB ASS'Y
CN3 5 1
CN4 1 3
CN2 1 12
PB30017 SUB JUNCTION PWB

3.36 TERMINAL SCHEMATIC DIAGRAM


REAR SIDE
AUDIO IN
LEFT HAND
AUDIO OUT
AUDIO IN
RIGHT HAND
AUDIO OUT
REAR SIDE
AV/CONN
GND
VIDEO IN
VIDEO OUT
NC
GND
PB 12V
NC
AUDIO IN(L)
NC
GND
AUDIO OUT(L)
AUDIO IN(R)
AUDIO OUT(R)
(E ONLY)
VPS ADAPTER
CN6
VPS DATA 0
VPS DATA 1
VPS CLK
VPS CTL
From/To 15 TIMER CN 4
CN5
VPS
GND
UNSW 12V
From 07 TUNER/IF CN3
CN8
VIDEO
GND
From 03 VIDEO SUB(3) CN102
To 13 FM AUDIO, CN2
CN2
AUDIO (L)
GND
AUDIO (R)
GND
From 13 FM AUDIO, CN13
CN7
GND
AUDIO (L)
GND
AUDIO (R)
LC1
LC2
LC3
LC4
(R)
R45 1K
R47 1K
B8
D5
R27 1K
B25
R7 75
R30 12K
R33 12K
R25 1K
D11
RY1
Q13 2SA1309Q,R,S
R51 39K
R52 1.5K
Q1 2SC1740S(QRS)
REMOTE PAUSE
05 MOTHER
CN1
From 02 REGULATOR, CN1
UNSW 12V
SWD 12V
GND
CN7
From/To 04 MECHACON, CN606
NC
GND
PB 12V
VIDEO
CN6
From 04 MECHACON, CN605
REMOTE PAUSE
PB
CN12
From 07 TUNER/IF, CN2
VIDEO
CN18
From 15 TIMER, CN2
TUNER
SC LED
CN20
From 16 JUNCTION, CN2
SC LED
CN10
CN1
IC1 BX6325 or 10VT27
H: ON
L: ON
H: ON
D1
C4 47/16
C5 47/16
R6 75
C3 470/6.3
R4 1K
EQ1
R5 220
Q1
C1 47/16
C2 47/16
R3 1K
R2 1K
B2
L1 100
C6 47/16
06 TERMINAL
05 MOTHER
CN1
GND
From 01 REGULATOR, CN1
CN14
AUDIO (RF)
From 13 FM AUDIO, CN5
CN4
CN24
CN3
CN1
AUDIO
GND
VIDEO
PB 12V
GND
UNSW 12V
RF CONV & MIX BOOSTER
IN
OUT

6

5

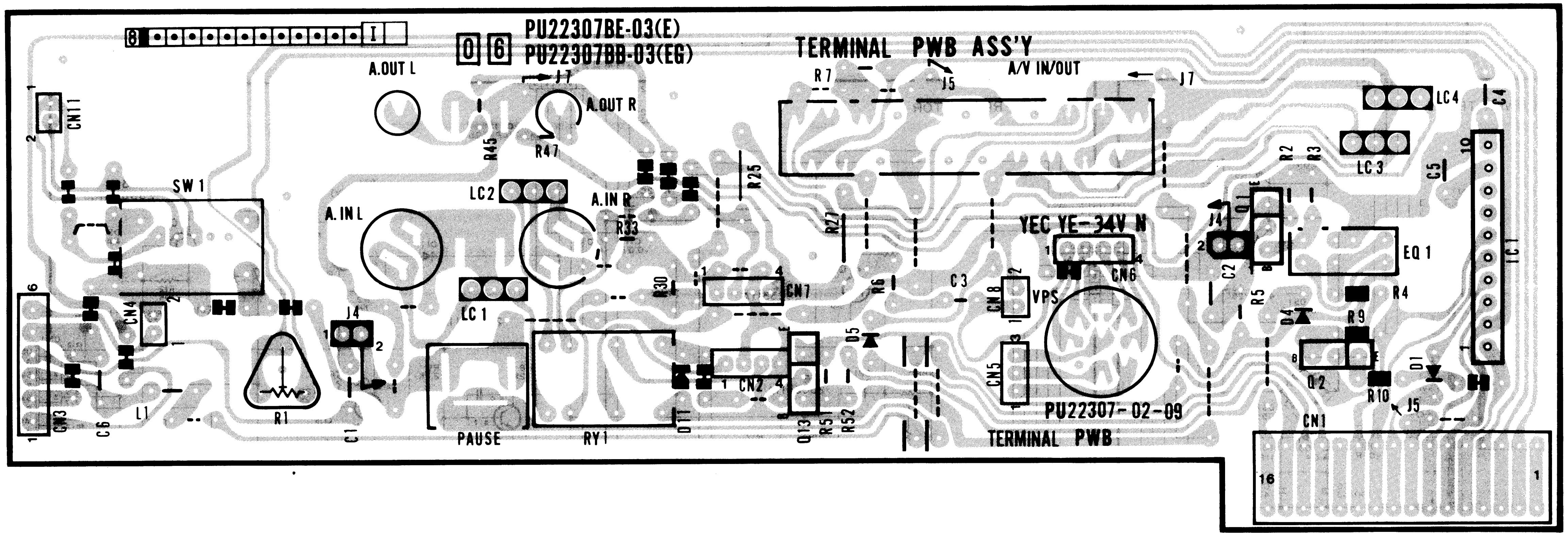
4

3

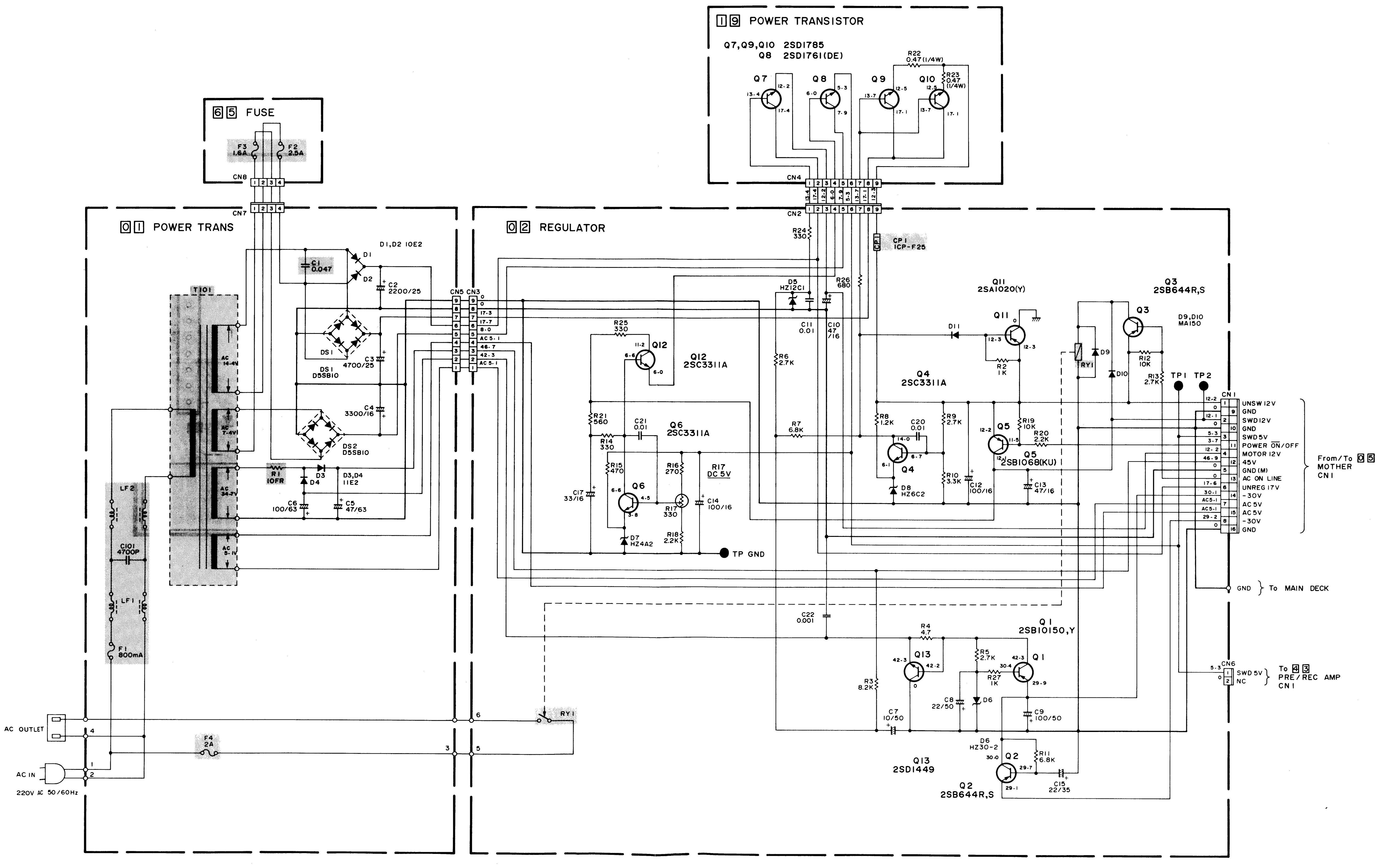
2

1

3.37 TERMINAL CIRCUIT BOARD


PU22307BE-03(E)
PU22307BB-03(EG)
0 6
TERMINAL PWB ASS'Y
A/V IN/OUT
PU22307-02-09
TERMINAL PWB
YEC YE-34V N
A.OUT L
A.OUT R
A.IN L
A.IN R
SW 1
PAUSE
RY1
R1
L1
C1
C2
C3
C4
C5
C6
CN1
CN2
CN3
CN4
CN5
CN6
CN7
CN8
CN11
LC1
LC2
LC3
LC4
J4
J5
J7
R2
R3
R4
R5
R6
R7
R9
R10
R25
R27
R30
R33
R45
R47
R51
R52
Q1
Q2
Q13
D1
D4
D5
D11
EQ 1
IC1
VPS
16
1
10

3.38 POWER SUPPLY SCHEMATIC DIAGRAM

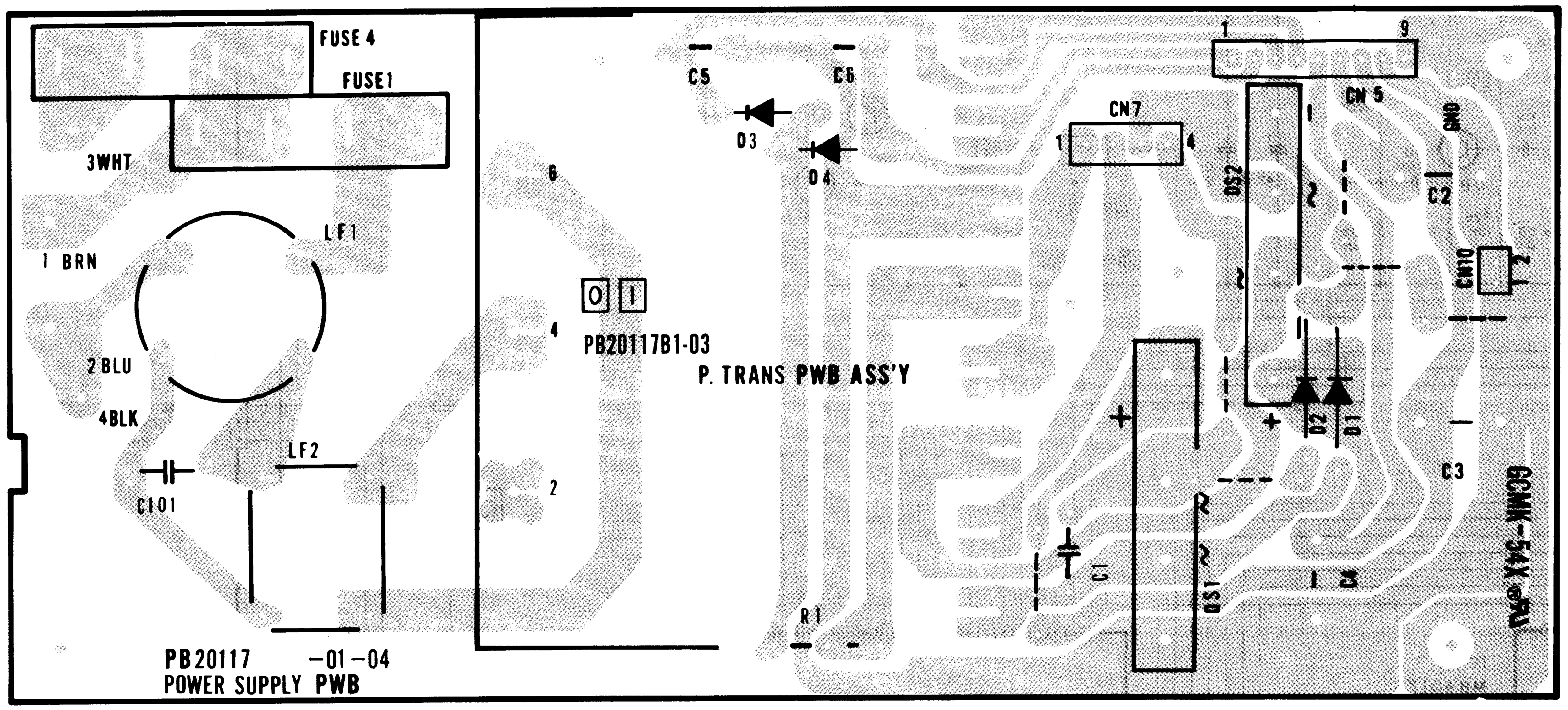


19 POWER TRANSISTOR
Q7,Q9,Q10 2SD1785
Q8 2SD1761(DE)
Q7
Q8
Q9
Q10
R22 0.47(1/4W)
R23 0.47 (1/4W)
CN4
CN2
65 FUSE
F3 1.6A
F2 2.5A
CN8
CN7
01 POWER TRANS
T101
AC 14.4V
AC 7.4V
AC 34.7V
AC 8.1V
D1,D2 10E2
D1
D2
C1 0.047
C2 2200/25
DS1 D5SB10
C3 4700/25
C4 3300/16
DS2 D5SB10
R1 10FR
D3
D4
D3,D4 11E2
C6 100/63
C5 47/63
LF2
C101 4700P
LF1
F1 800mA
CN5
CN3
17-3
17-7
8-0
AC5-1
46-7
42-3
AC5-1
AC OUTLET
AC IN
220V AC 50/60Hz
F4 2A
RY1
02 REGULATOR
R24 330
CP1 ICP-F25
D5 HZ12C1
R26 680
C11 0.01
C10 47/16
R25 330
Q12
Q12 2SC3311A
R6 2.7K
Q11 2SA1020(Y)
Q11
D11
R2 1K
Q3 2SB644R,S
Q3
D9,D10 MA150
D9
D10
R12 10K
R13 2.7K
TP1
TP2
Q4 2SC3311A
R21 560
C21 0.01
Q6 2SC3311A
R14 330
R7 6.8K
R8 1.2K
C20 0.01
R9 2.7K
Q5
R19 10K
R20 2.2K
Q5 2SB1068(KU)
R15 470
R16 270
R17 DC 5V
Q6
Q4
C17 33/16
R17 330
C14 100/16
D8 HZ6C2
R10 3.3K
C12 100/16
C13 47/16
D7 HZ4A2
R18 2.2K
TP GND
CN1
UNSW 12V
GND
SWD12V
GND
SWD5V
POWER ON/OFF
MOTOR 12V
45V
GND(M)
AC ON LINE
UNREG 17V
-30V
AC 5V
AC 5V
-30V
GND
From/To 05 MOTHER CN1
GND } To MAIN DECK
C22 0.001
R4 4.7
Q1 2SB1015O,Y
Q13
R5 2.7K
Q1
R27 1K
R3 8.2K
C8 22/50
D6
C9 100/50
C7 10/50
CN6
SWD 5V
NC
To 43 PRE/REC AMP CN1
D6 HZ30-2
Q2
R11 6.8K
Q13 2SD1449
C15 22/35
Q2 2SB644R,S

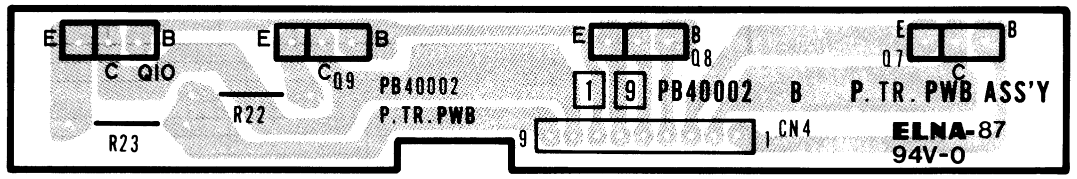
NOTE:
Voltages are DC-measured with a digital voltmeter during stop mode.

3.39 POWER TRANSFORMER, REGULATOR, FUSE AND POWER TRANSISTOR CIRCUIT BOARDS

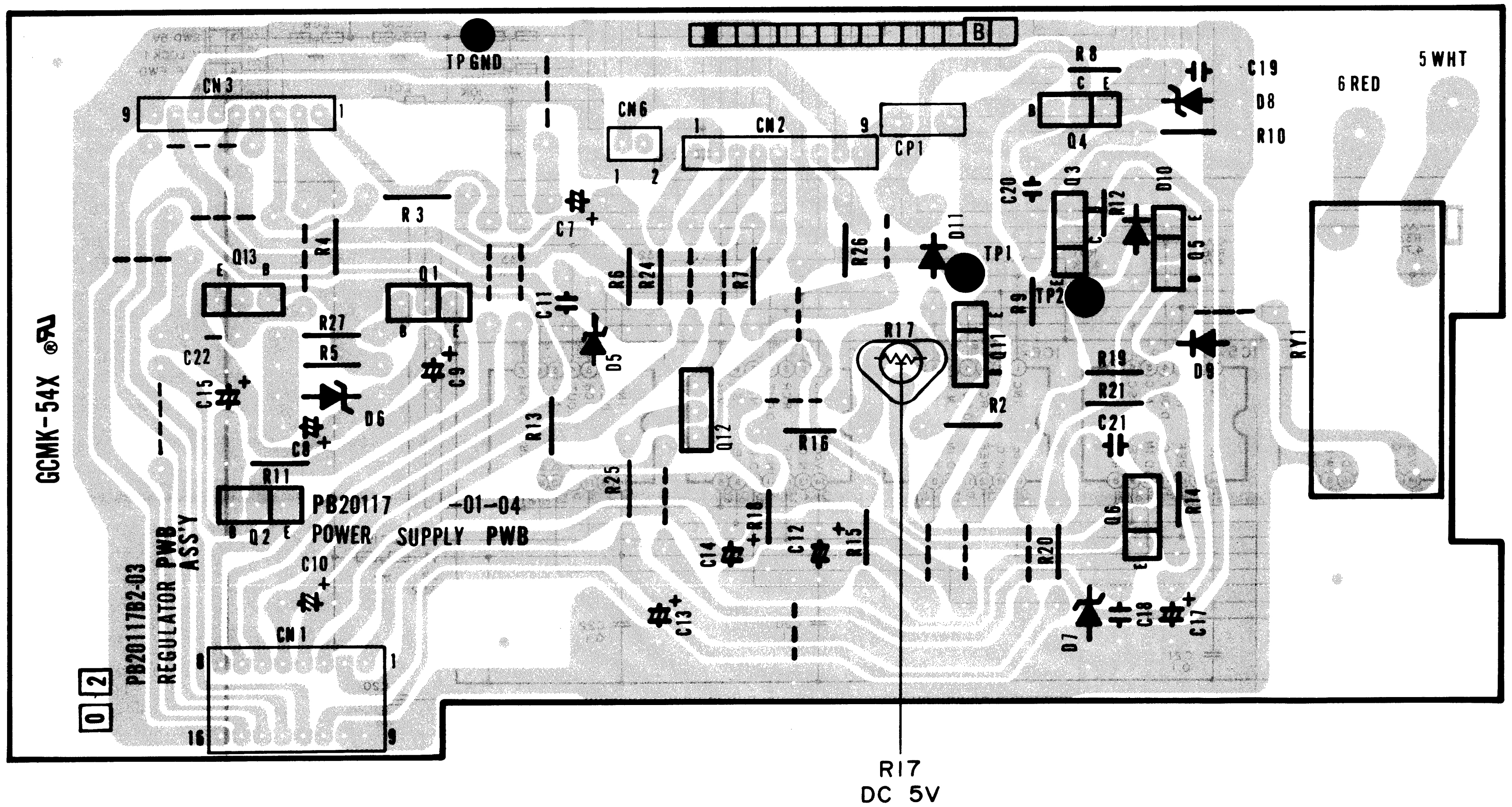
– POWER TRANSFORMER –


FUSE 4
FUSE1
3WHT
1 BRN
LF1
2 BLU
4BLK
LF2
C101
PB20117 -01-04
POWER SUPPLY PWB
C5
C6
D3
D4
6
4
2
PB20117B1-03
P. TRANS PWB ASS'Y
R1
CN7
1
4
1
9
CN 5
GND
DS2
C2
CN10
D2
D1
C3
C1
DS1
C4
GCMK-54X

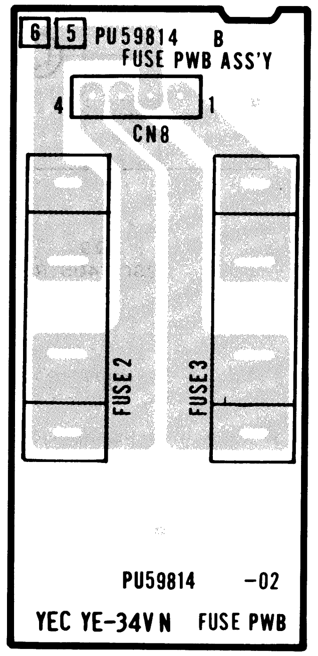
– POWER TRANSISTOR –


E
B
C Q10
E
B
C Q9
PB40002
P. TR. PWB
E
B
Q8
E
B
Q7
C
1
9
PB40002 B
P. TR. PWB ASS'Y
R23
R22
9
CN4
1
ELNA-87
94V-0

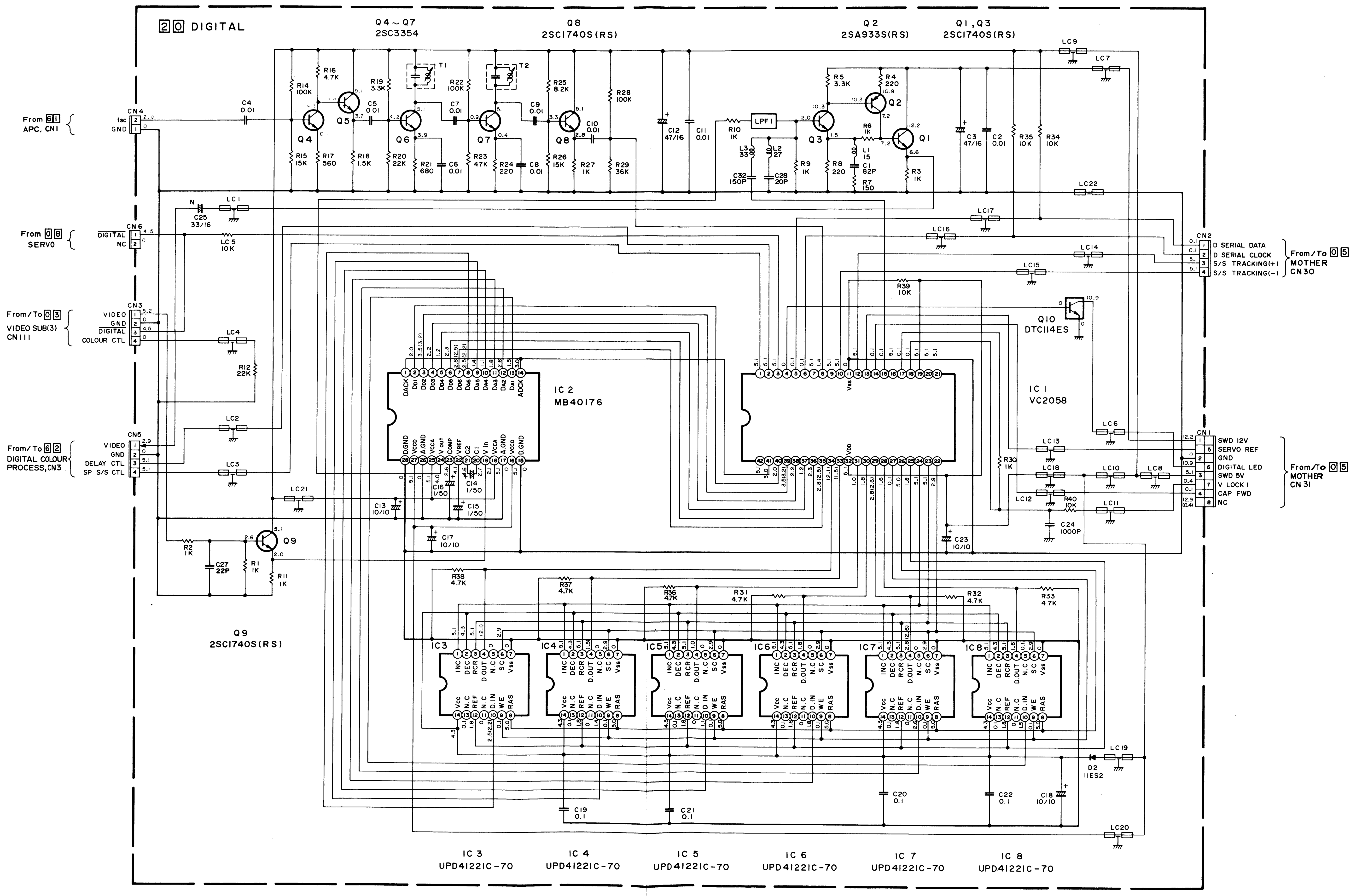
– REGULATOR –


TP GND
B
CN3
9
1
CN6
1 2
CN2
1
9
CP1
R8
C E
Q4
C19
D8
R10
6 RED
5 WHT
R3
C7
Q13
R4
Q1
C11
R6
R24
R7
R26
D11
TP1
C20
Q3
R12
D10
Q5
R9
TP2
R27
R5
C22
C15
D6
C8
C9
D5
R17
Q11
R19
R21
D9
RY1
R2
C21
R13
Q12
R16
R11
Q2
PB20117 -01-04
POWER SUPPLY PWB
R25
R18
C14
C12
R15
R20
Q6
R14
C10
C13
D7
C18
C17
CN1
8
1
16
9
PB20117B2-03
REGULATOR PWB ASS'Y
GCMK-54X
0 2
R17
DC 5V

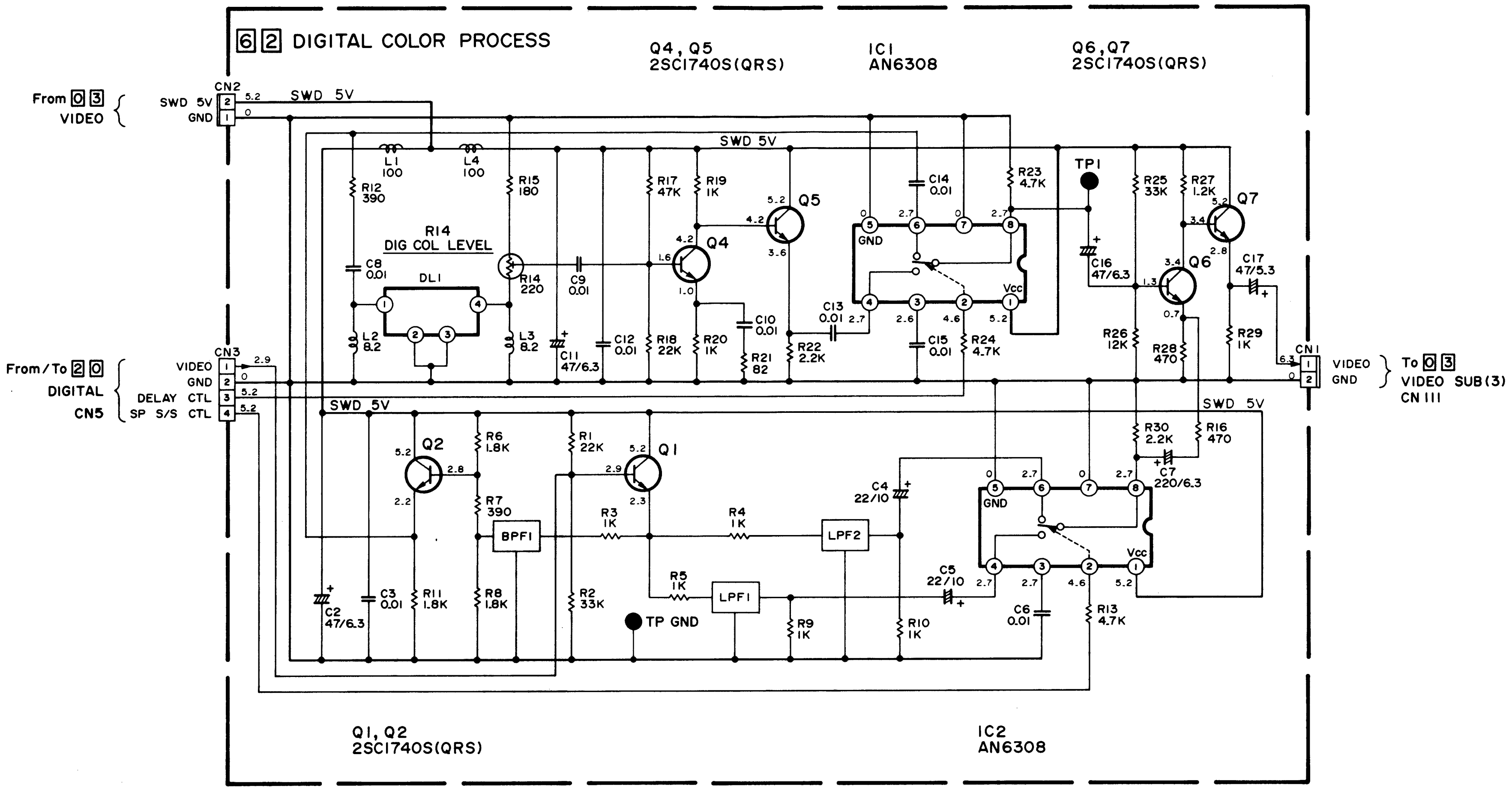
– FUSE –


6 5
PU59814 B
FUSE PWB ASS'Y
4
1
CN8
FUSE2
FUSE3
PU59814 -02
YEC YE-34VN FUSE PWB

3.40 DIGITAL SCHEMATIC DIAGRAM


20 DIGITAL
Q4～Q7
2SC3354
Q8
2SC1740S(RS)
Q2
2SA933S(RS)
Q1, Q3
2SC1740S(RS)
From 61 APC, CN1
CN4
fsc
GND
From 08 SERVO
CN6
DIGITAL
NC
From/To 03 VIDEO SUB(3) CN111
CN3
VIDEO
GND
DIGITAL
COLOUR CTL
From/To 62 DIGITAL COLOUR PROCESS,CN3
CN5
VIDEO
GND
DELAY CTL
SP S/S CTL
T1
T2
LPF1
IC 2
MB40176
IC 1
VC2058
Q10
DTC114ES
CN2
D SERIAL DATA
D SERIAL CLOCK
S/S TRACKING(+)
S/S TRACKING(−)
From/To 05 MOTHER CN30
CN1
SWD 12V
SERVO REF
GND
DIGITAL LED
SWD 5V
V LOCK I
CAP FWD
NC
From/To 05 MOTHER CN 31
Q9
2SC1740S(RS)
D2
11ES2
IC 3
UPD41221C-70
IC 4
UPD41221C-70
IC 5
UPD41221C-70
IC 6
UPD41221C-70
IC 7
UPD41221C-70
IC 8
UPD41221C-70
6
5
4
3
2
1
A
B
C
E
F
G
H

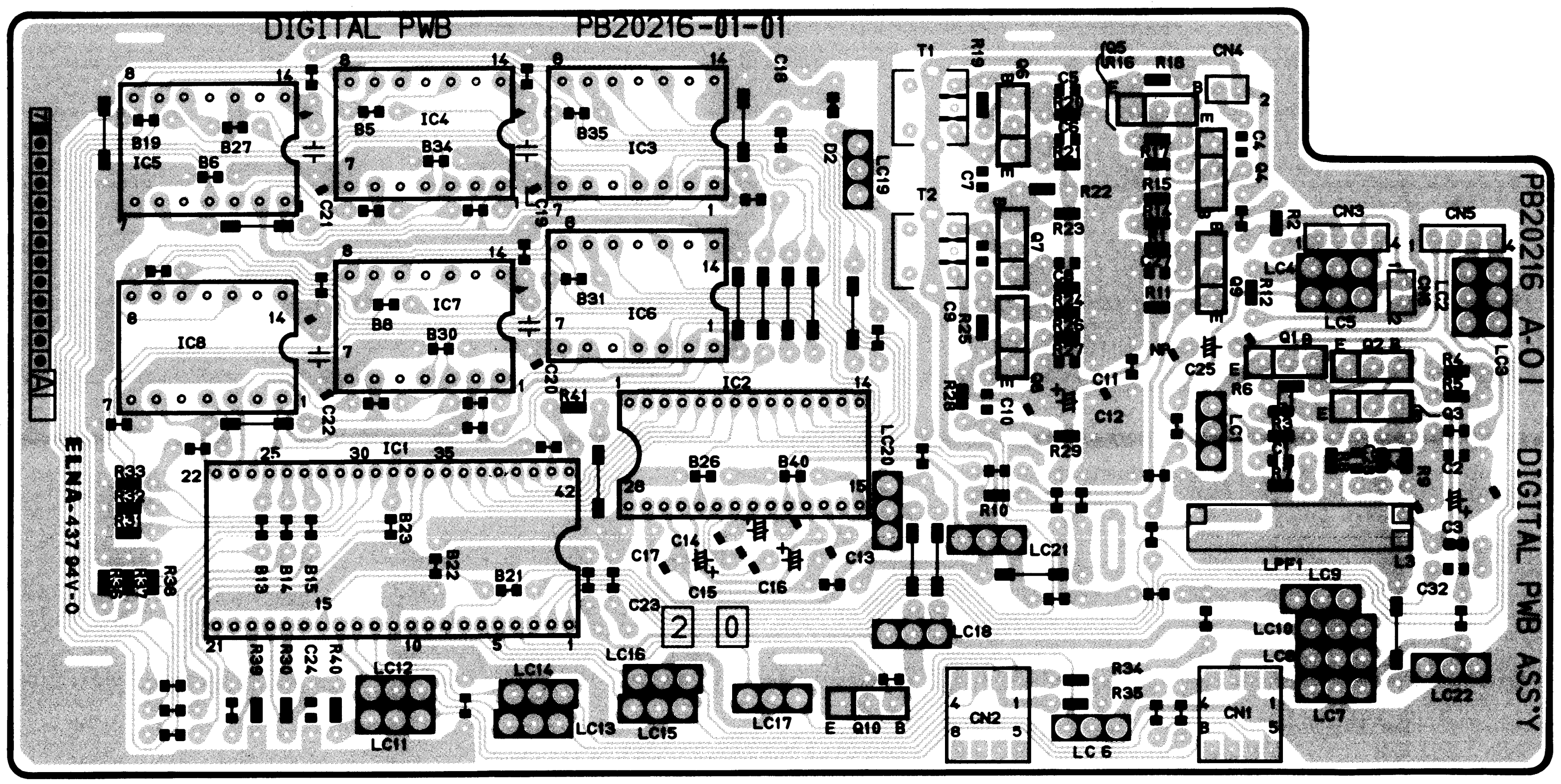
3.41 DIGITAL COLOR PROCESS SCHEMATIC DIAGRAM



62 DIGITAL COLOR PROCESS
Q4, Q5 2SC1740S(QRS)
IC1 AN6308
Q6, Q7 2SC1740S(QRS)
From 03 VIDEO
SWD 5V
GND
CN2
From/To 20 DIGITAL CN5
VIDEO
GND
DELAY CTL
SP S/S CTL
CN3
R14 DIG COL LEVEL
DL1
L1 100
L4 100
L2 8.2
L3 8.2
R12 390
R15 180
R17 47K
R19 1K
R18 22K
R20 1K
R21 82
R22 2.2K
R23 4.7K
R24 4.7K
R25 33K
R27 1.2K
R26 12K
R28 470
R29 1K
C8 0.01
C9 0.01
C10 0.01
C11 47/6.3
C12 0.01
C13 0.01
C14 0.01
C15 0.01
C16 47/6.3
C17 47/5.3
TP1
CN1
VIDEO
GND
To 03 VIDEO SUB(3) CN III
SWD 5V
Q1
Q2
R1 22K
R2 33K
R3 1K
R4 1K
R5 1K
R6 1.8K
R7 390
R8 1.8K
R9 1K
R10 1K
R11 1.8K
R13 4.7K
R16 470
R30 2.2K
C2 47/6.3
C3 0.01
C4 22/10
C5 22/10
C6 0.01
C7 220/6.3
BPF1
LPF1
LPF2
TP GND
GND
Vcc
Q1, Q2 2SC1740S(QRS)
IC2 AN6308

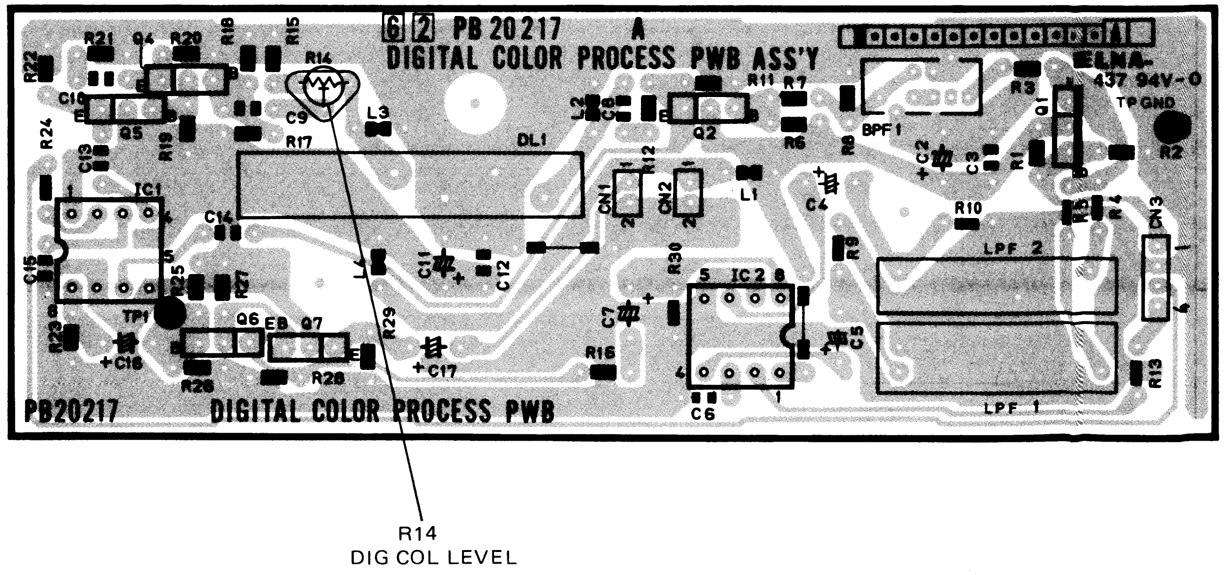
3.42 DIGITAL AND DIGITAL COLOR PROCESS CIRCUIT BOARDS

– DIGITAL –



DIGITAL PWB
PB20216-01-01
PB20216 A-01 DIGITAL PWB ASS'Y
ELNA-437 94V-0
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC8
CN1
CN2
CN4
CN5
T1
T2
LPF1
20

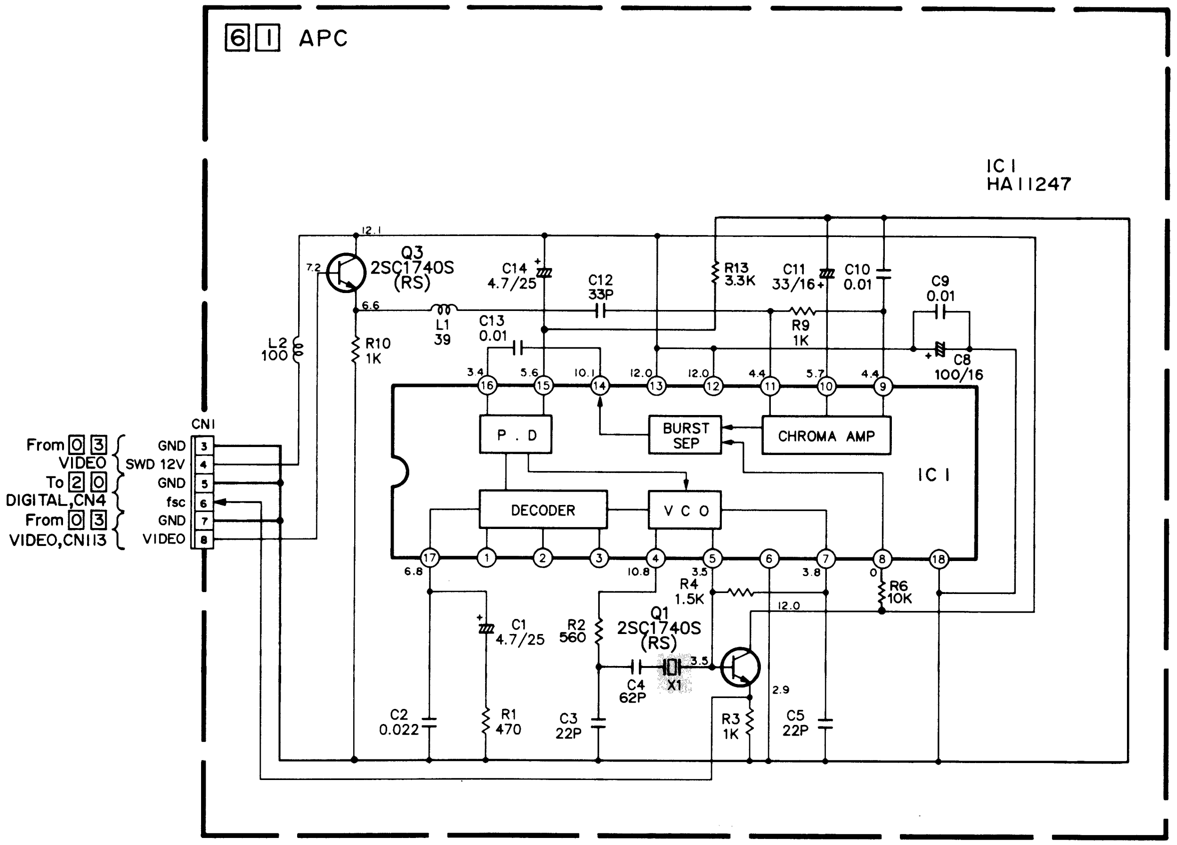
– DIGITAL COLOR PROCESS –

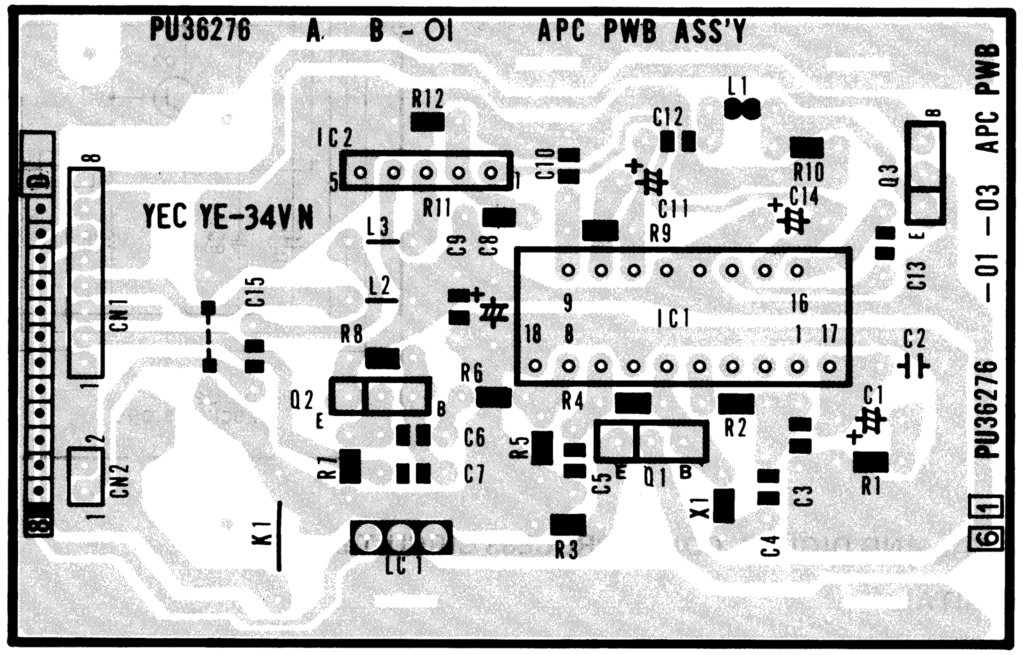


62 PB 20217 A
DIGITAL COLOR PROCESS PWB ASS'Y
ELNA-437 94V-0
PB20217
DIGITAL COLOR PROCESS PWB
IC1
IC2
DL1
BPF1
LPF 1
LPF 2
TP1
TP GND
CN1
CN2
CN3
R14

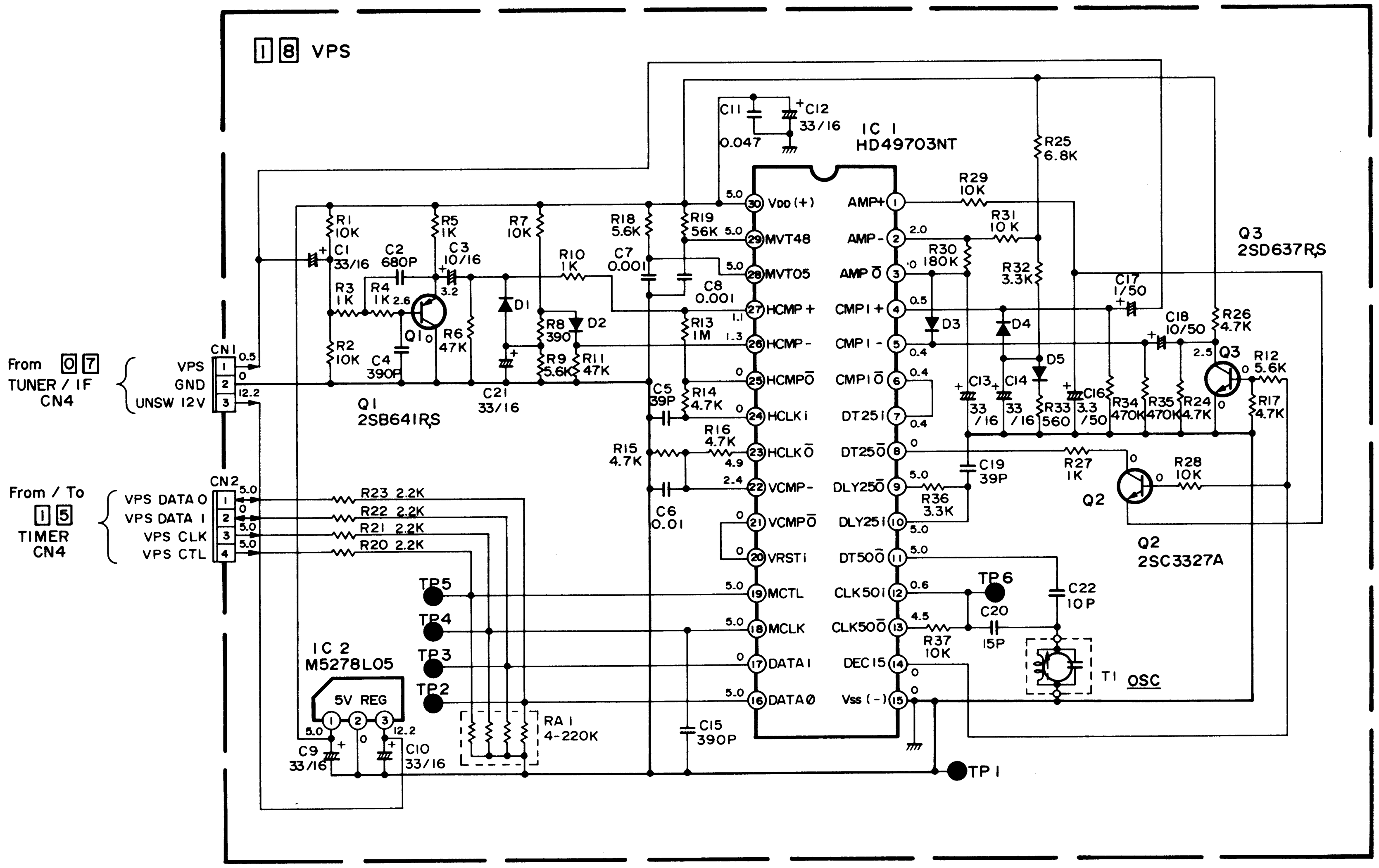
R14
DIG COL LEVEL

3.43 APC SCHEMATIC DIAGRAM AND CIRCUIT BOARD

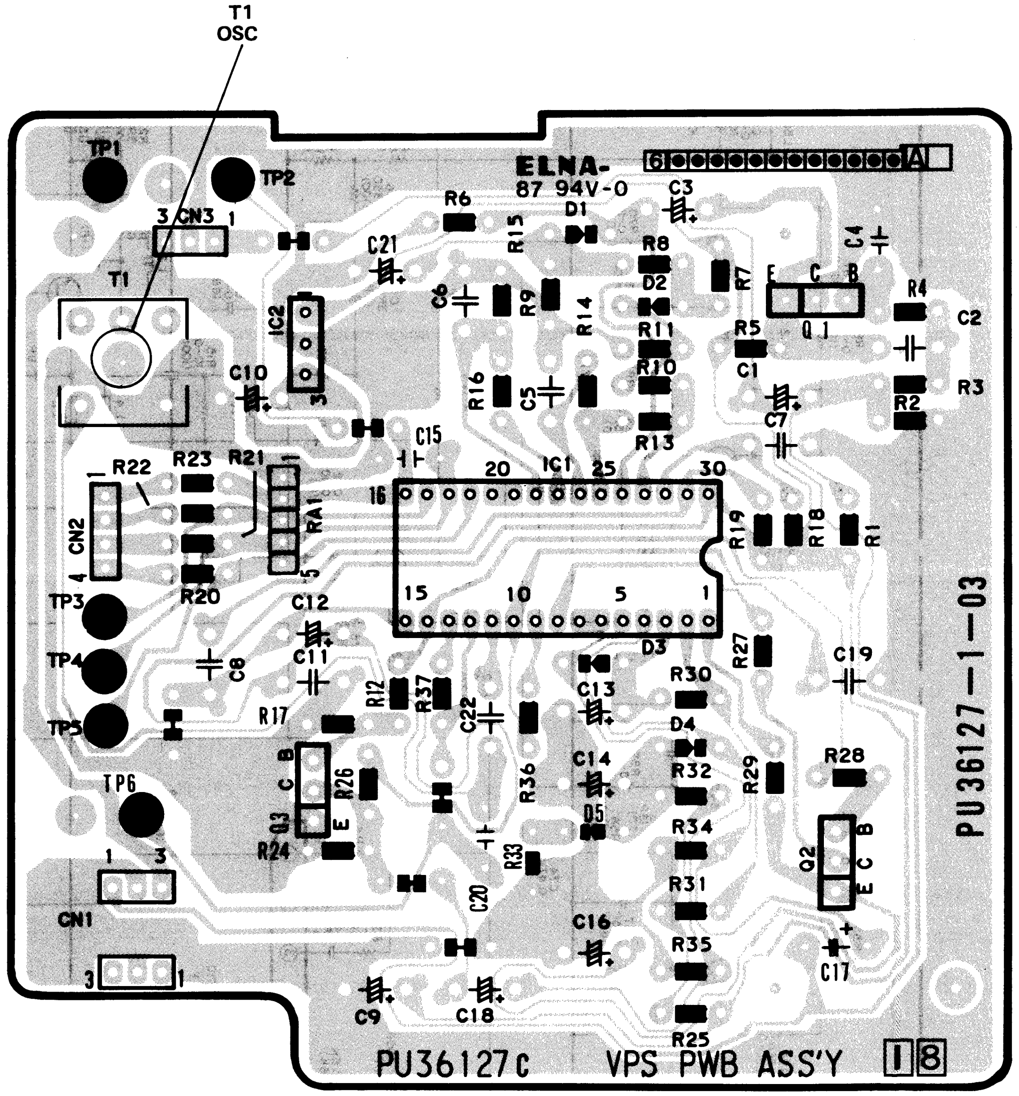

6 1 APC
IC1
HA11247
Q3
2SC1740S
(RS)
7.2
12.1
6.6
C14
4.7/25
C12
33P
R13
3.3K
C11
33/16
C10
0.01
C9
0.01
C8
100/16
L2
100
R10
1K
L1
39
C13
0.01
R9
1K
3.4
5.6
10.1
12.0
12.0
4.4
5.7
4.4
16
15
14
13
12
11
10
9
P . D
BURST SEP
CHROMA AMP
IC1
DECODER
V C O
17
1
2
3
4
5
6
7
8
18
6.8
10.8
3.5
3.8
0
R4
1.5K
R6
10K
12.0
C1
4.7/25
R2
560
Q1
2SC1740S
(RS)
C4
62P
X1
3.5
2.9
C2
0.022
R1
470
C3
22P
R3
1K
C5
22P
CN1
From 0 3
VIDEO
To 2 0
DIGITAL,CN4
From 0 3
VIDEO,CN113
GND 3
SWD 12V 4
GND 5
fsc 6
GND 7
VIDEO 8


PU36276 A B - 01 APC PWB ASS'Y
PU36276 -01 -03 APC PWB
YEC YE-34VN
6 1
R12
IC2
5
1
C10
C12
L1
R10
Q3
B
E
C14
C11
R11
R9
L3
C9
C8
C15
CN1
8
1
L2
R8
Q2
E
B
R6
IC1
9
16
18
8
1
17
C2
C13
R4
R2
C1
R1
C6
C7
R5
C5
E
Q1
B
X1
C3
C4
R7
CN2
2
1
K1
LC1
R3

3.44 VPS(VIDEO PROGRAM SYSTEM) SCHEMATIC DIAGRAM AND CIRCUIT BOARD (EG ONLY)



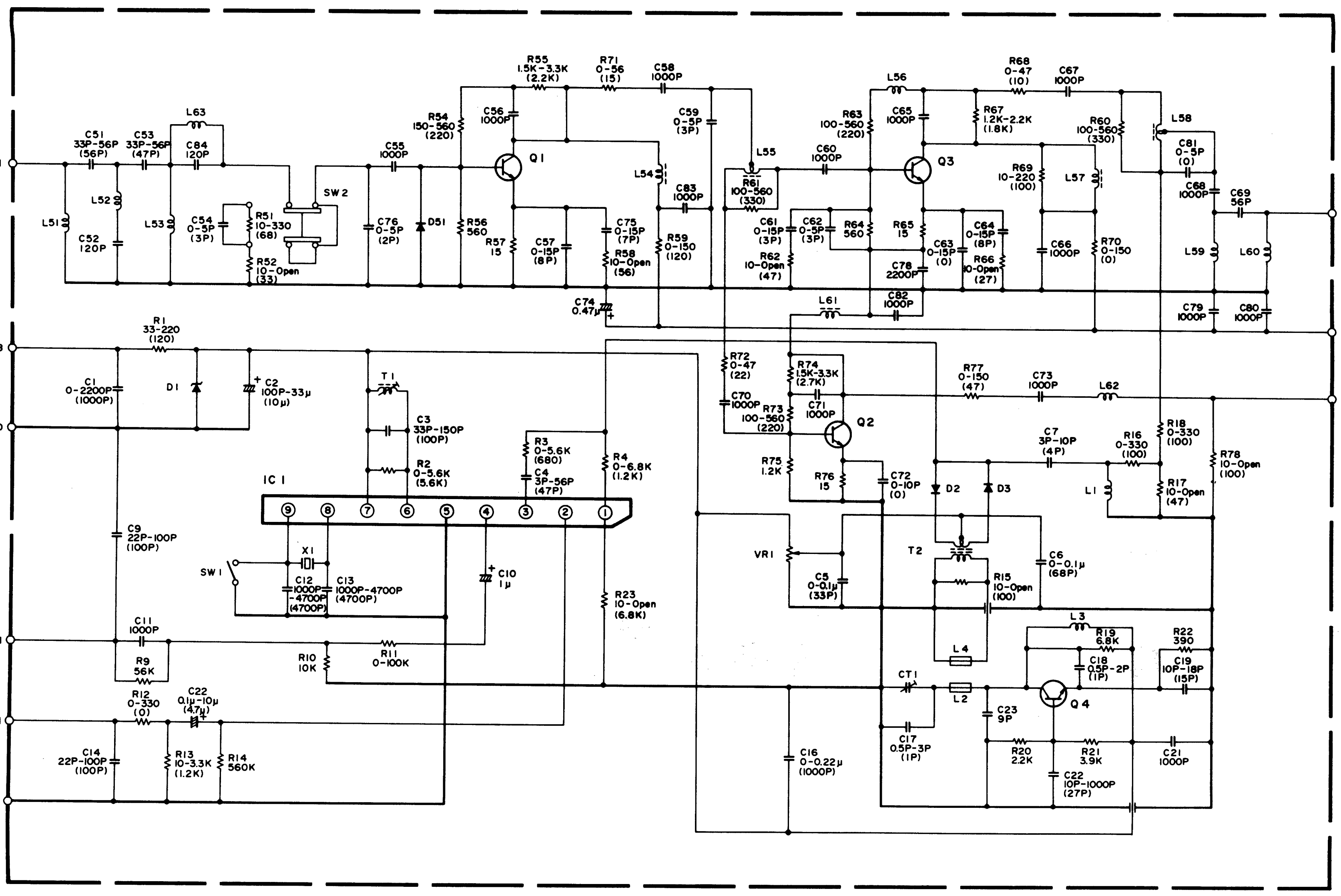
18 VPS
From 07 TUNER / IF CN4
VPS
GND
UNSW 12V
CN1
From / To 15 TIMER CN4
VPS DATA 0
VPS DATA 1
VPS CLK
VPS CTL
CN2
IC 1 HD49703NT
IC 2 M5278L05
5V REG
Q1 2SB641R,S
Q2 2SC3327A
Q3 2SD637R,S
T1 OSC
RA 1 4-220K
TP1
TP2
TP3
TP4
TP5
TP6
VDD (+)
MVT48
MVT05
HCMP+
HCMP-
HCMPŌ
HCLKi
HCLKŌ
VCMP-
VCMPŌ
VRSTi
MCTL
MCLK
DATA1
DATAØ
AMP+
AMP-
AMPŌ
CMP1+
CMP1-
CMP1Ō
DT25i
DT25Ō
DLY25Ō
DLY25i
DT50Ō
CLK50i
CLK50Ō
DEC15
Vss (-)



T1 OSC
ELNA-
87 94V-0
PU36127-1-03
PU36127c
VPS PWB ASS'Y
18
IC1
IC2
CN1
CN2
CN3
TP1
TP2
TP3
TP4
TP5
TP6
Q1
Q2
Q3
RA1

3.45 RF CONVERTER AND MIX BOOSTER SCHEMATIC DIAGRAM

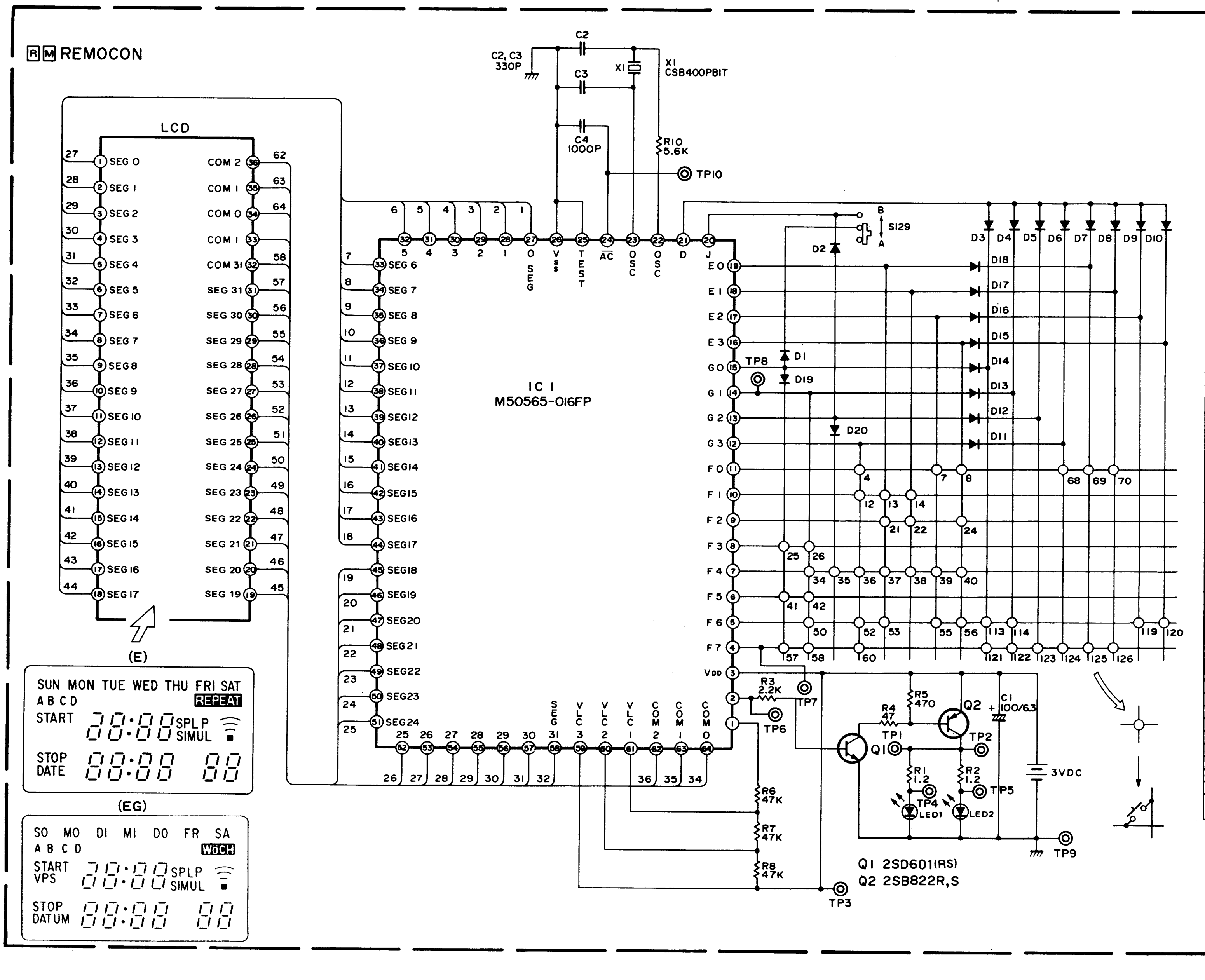
NOTES:
1. All parts shown in this schematic are critical for safety.
2. This schematic is only for reference. Avoid replacing individual parts. Replace the entire unit only.



ANT IN
MOD +B
GROUND
AUDIO IN
VIDEO IN
GROUND
TV OUT
BST +B
VTR OUT
IC 1
SW 1
SW 2
X1
T1
T2
VR1
CT1
Q1
Q2
Q3
Q4
D1
D2
D3
D51
L1
L2
L3
L4
L51
L52
L53
L54
L55
L56
L57
L58
L59
L60
L61
L62
L63
R55 1.5K-3.3K (2.2K)
R71 0-56 (15)
C58 1000P
R68 0-47 (10)
C67 1000P
R54 150-560 (220)
C56 1000P
C59 0-5P (3P)
R63 100-560 (220)
C65 1000P
R67 1.2K-2.2K (1.8K)
R60 100-560 (330)
C81 0-5P (0)
C68 1000P
C69 56P
C51 33P-56P (56P)
C53 33P-56P (47P)
C84 120P
C55 1000P
C83 1000P
R61 100-560 (330)
C60 1000P
R69 10-220 (100)
C52 120P
C54 0-5P (3P)
R51 10-330 (68)
R52 10-Open (33)
C76 0-5P (2P)
R56 560
R57 15
C57 0-15P (8P)
C75 0-15P (7P)
R58 10-Open (56)
R59 0-150 (120)
C61 0-15P (3P)
C62 0-5P (3P)
R64 560
R65 15
C63 0-15P (0)
C64 0-15P (8P)
R66 10-Open (27)
C66 1000P
R70 0-150 (0)
R62 10-Open (47)
C78 2200P
C74 0.47μ
C82 1000P
C79 1000P
C80 1000P
R1 33-220 (120)
C1 0-2200P (1000P)
C2 100P-33μ (10μ)
R72 0-47 (22)
R74 1.5K-3.3K (2.7K)
C71 1000P
C70 1000P
R73 100-560 (220)
R77 0-150 (47)
C73 1000P
C3 33P-150P (100P)
R2 0-5.6K (5.6K)
R3 0-5.6K (680)
C4 3P-56P (47P)
R4 0-6.8K (1.2K)
C7 3P-10P (4P)
R16 0-330 (100)
R18 0-330 (100)
R78 10-Open (100)
R17 10-Open (47)
R75 1.2K
R76 15
C72 0-10P (0)
C9 22P-100P (100P)
C12 1000P-4700P (4700P)
C13 1000P-4700P (4700P)
C10 1μ
R23 10-Open (6.8K)
C5 0-0.1μ (33P)
C6 0-0.1μ (68P)
R15 10-Open (100)
C11 1000P
R9 56K
R10 10K
R11 0-100K
R19 6.8K
C18 0.5P-2P (1P)
R22 390
C19 10P-18P (15P)
R12 0-330 (0)
C22 0.1μ-10μ (4.7μ)
C23 9P
C14 22P-100P (100P)
R13 10-3.3K (1.2K)
R14 560K
C16 0-0.22μ (1000P)
C17 0.5P-3P (1P)
R20 2.2K
R21 3.9K
C21 1000P
C22 10P-1000P (27P)

3.46 REMOTE CONTROL SCHEMATIC DIAGRAM

NOTE:
All parts shown in this schematic are critical for safety. Replace only with specified part numbers.



RM REMOCON
LCD
SEG 0
SEG 1
SEG 2
SEG 3
SEG 4
SEG 5
SEG 6
SEG 7
SEG 8
SEG 9
SEG 10
SEG 11
SEG 12
SEG 13
SEG 14
SEG 15
SEG 16
SEG 17
COM 2
COM 1
COM 0
COM 1
COM 3
SEG 31
SEG 30
SEG 29
SEG 28
SEG 27
SEG 26
SEG 25
SEG 24
SEG 23
SEG 22
SEG 21
SEG 20
SEG 19
(E)
SUN MON TUE WED THU FRI SAT
A B C D
REPEAT
START
SPLP
SIMUL
STOP
DATE
(EG)
SO MO DI MI DO FR SA
A B C D
WöCH
START
VPS
SPLP
SIMUL
STOP
DATUM
C2, C3 330P
C2
C3
X1
X1 CSB400PBIT
C4 1000P
R10 5.6K
TP10
IC 1
M50565-016FP
S129
D1
D2
D19
D20
D3
D4
D5
D6
D7
D8
D9
D10
D11
D12
D13
D14
D15
D16
D17
D18
TP8
VDD
R3 2.2K
TP7
TP6
R4 47
R5 470
C1 100/63
Q1
Q2
TP1
TP2
R1 1.2
R2 1.2
TP4
TP5
LED1
LED2
3VDC
TP9
R6 47K
R7 47K
R8 47K
TP3
Q1 2SD601(RS)
Q2 2SB822R,S

NO.	KEY NAME
126	MEMORY PROG. TRANS
125	MEMORY CANCEL
124	MEMORY PROGRAM
123	REC
122	TV OPERATE
121	TIMER
120	TV VOL. −
119	TV VOL. +
114	TV CH −
113	TV CH +
70	SOLARIZATION
69	DIGITAL MEMORY
68	DIGITAL OFF
60	GO-TO
58	COUNTER RESET
57	DISPLAY
56	PROGRAM
55	CANCEL
53	CH
52	0/AUX
50	SP/LP
42	9/REPEAT
41	8/DAILY
40	7
39	6
38	5
37	4
36	3
35	2
34	1
26	TV PROG. +
25	TV PROG. −
24	AUDIO MONITOR
22	SLOW +
21	SLOW −
14	PAUSE/STILL
13	PLAY
12	OPERATE
8	REW
7	FF
4	STOP

SECTION 4
EXPLODED VIEWS AND PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

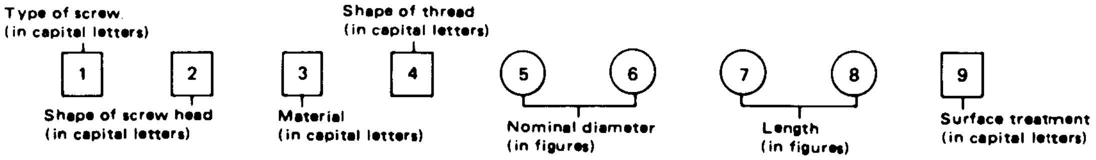
NOTE:

[M] indicates mechanical symbol number.

4.1 STANDARD PART NUMBER CODING

4.1.1 Screw coding

Standard screw part numbers are as follows.

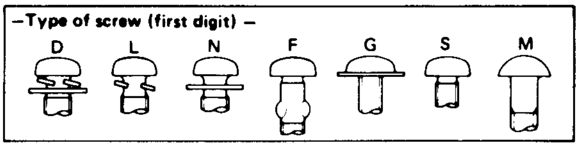

Type of screw
(in capital letters)
Shape of thread
(in capital letters)
1
2
3
4
5
6
7
8
9
Shape of screw head
(in capital letters)
Material
(in capital letters)
Nominal diameter
(in figures)
Length
(in figures)
Surface treatment
(in capital letters)

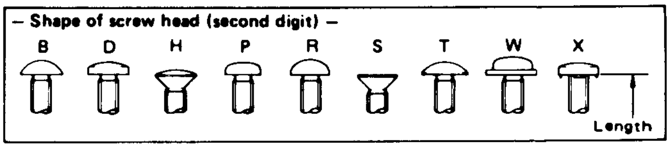
Type of screw (first digit)

S	Normal screws
D	Assembled machine screws (with plain and spring washers)
L	" (with spring washer)
N	" (with plain washer)
F	Feather screws
G	Washer head tapping screws
M	Wood screws

Shape of screw head (second digit)

B	Brazier head
D	Binding head
H	Oval countersunk head
P	Pan head
R	Round head
S	Flat head
T	Truss head
W	Washer head (machine screws)
X	Toothed head


–Type of screw (first digit) –
D
L
N
F
G
S
M

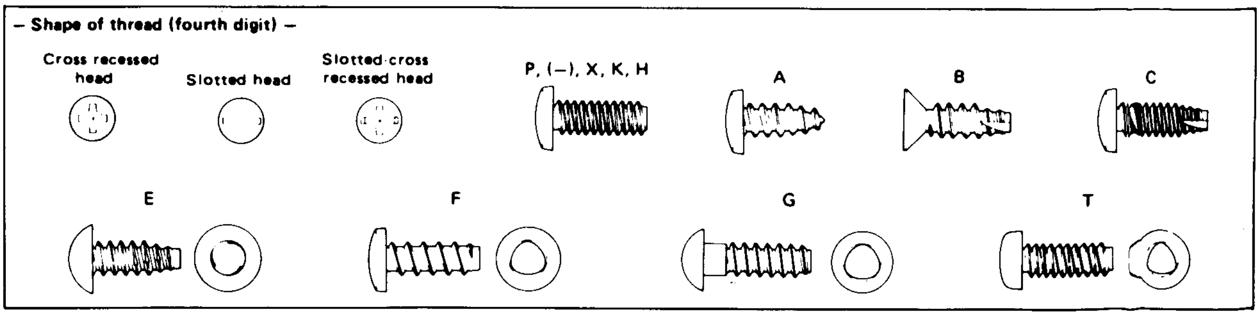

– Shape of screw head (second digit) –
B
D
H
P
R
S
T
W
X
Length

Material (third digit)

S	Steel
E	Stainless steel
C	Cast iron
U	Copper
B	Brass
P	Phosphor bronze
N	Nickel silver
Y	Cast brass
A	Aluminum
Z	Zinc alloy
K	Polycarbonate

Shape of thread (fourth digit)

P	Cross recessed head screws
(–)	Slotted head machine screws
X	Slotted-cross recessed head machine screws
K	Cross recessed head machine screws for precision equipment (type 1)
H	" (type 3)
A	Cross recessed head tapping screws (type 1)
B	" (type 2)
C	" (type 3)
E	Cross recessed head special tapping screws (brand : evertight)
F	" (brand : P-tight)
T	" (brand : taptight)
G	"


– Shape of thread (fourth digit) –
Cross recessed head
Slotted head
Slotted-cross recessed head
P, (–), X, K, H
A
B
C
E
F
G
T

Nominal diameter (fifth and sixth digits)

The fifth and sixth digits indicate a nominal diameter or dimension. If the dimension exceeds 10 mm, three digits are used. The number indicates a nominal diameter or dimension, given in millimeters, multiplied by ten.

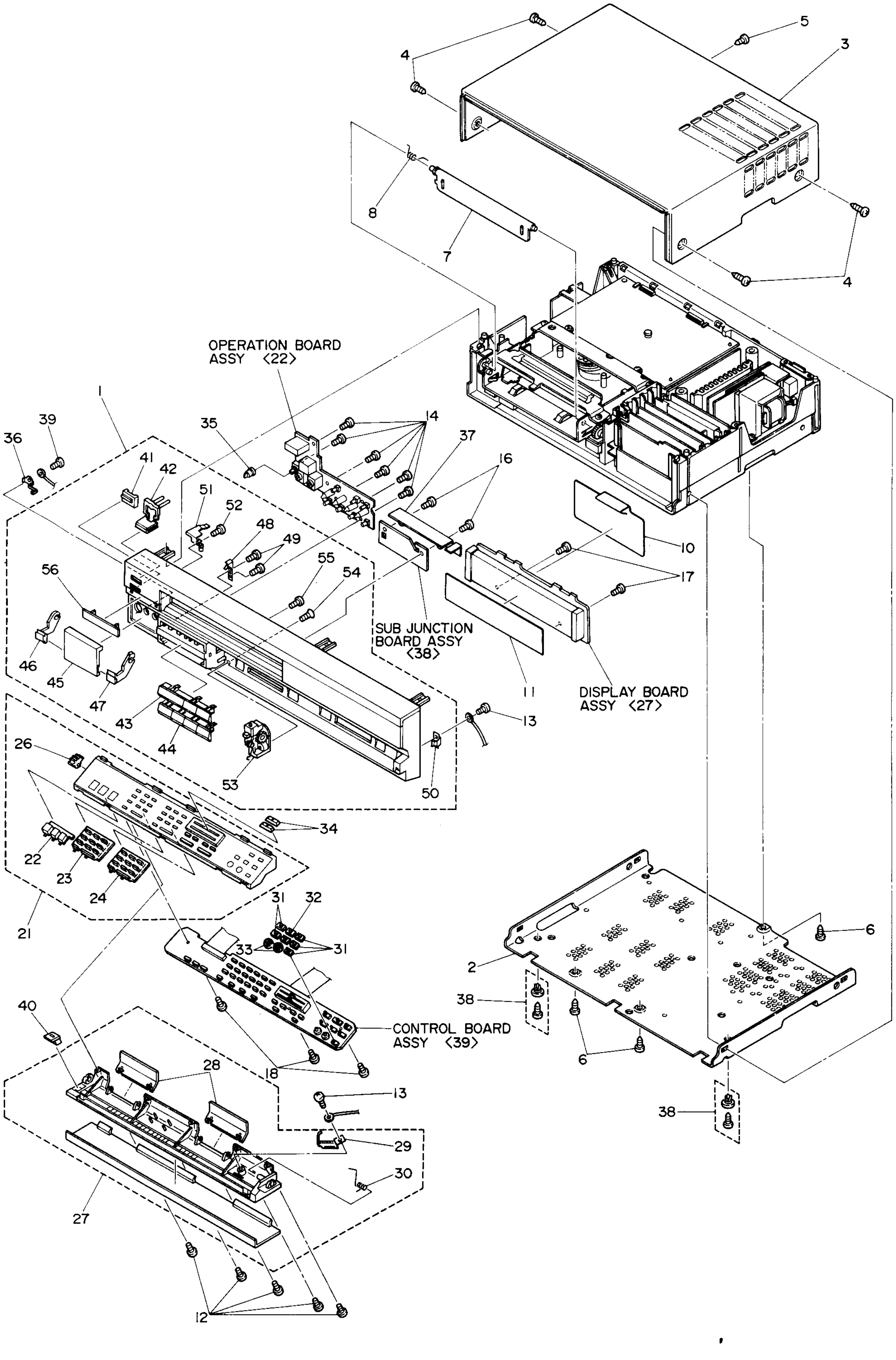
Length (seventh and eighth digits)

The seventh and eighth digits indicate length in millimeters. The preceding figure is zero when the dimension is smaller than 10 mm. For machine screws used in precision equipment whose length is given in units of 0.1 mm, the number indicates ten times the size of their length.

Surface treatment (ninth digit)

Z	Dichromate treatment after galvanizing (MFZn II-C)
N	Nickel plating (MFNi II, MFNi I)
R	Chromium plating (MBCr II, MBCr I)
G	Silver plating (SP4)
B	Black coating after plating
F	Blackening of iron (FB)
M	Blackening after galvanizing
K	Pickling of brass (PF2)
P	Phosphate treatment
W	Uni-chrome plating
L	Coated with transparent paint
A	Colored red after galvanizing (MFZn II-C)
C	Colored blue after galvanizing (MFZn II-C)
T	Colored green after galvanizing (MFZn II-C)
V	Colored purple after galvanizing (MFZn II-C)

4.2 CABINET ASSEMBLY < M2 >



OPERATION BOARD ASSY <22>
SUB JUNCTION BOARD ASSY <38>
DISPLAY BOARD ASSY <27>
CONTROL BOARD ASSY <39>
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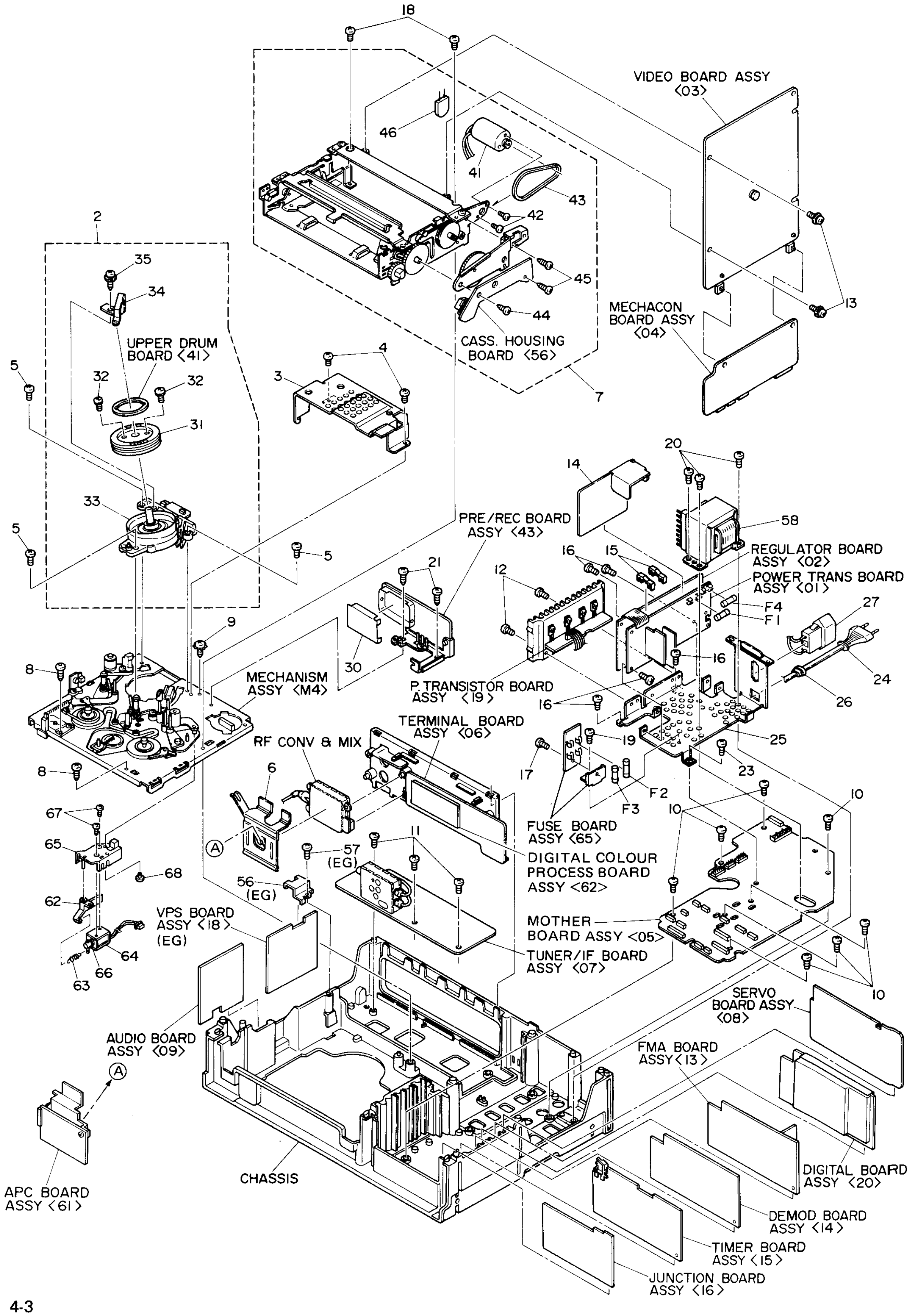
2. CABINET ASSEMBLY <M2>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	1	PQ10496F-15	FRONT PANEL ASSY,INCL.41-56,EG
		PQ10496C-15	FRONT PANEL ASSY,INCL41-56,E
⚠	2	PQ10330-1-6	BOTTOM COVER
⚠	3	PQ10328-2-9	TOP COVER
	4	SDSA4014M	TAPPING SCREW,TOP,X4
	5	SDSF3010M	TAPPING SCREW,TOP
	6	SDSF3010Z	TAPPING SCREW,BOTTOM,X3
	7	PQ31819-7-4	C.H.DOOR
	8	PQ42410-1-1	TORSION SPRING
	10	PQ31967	PROTECTOR
	11	PQ31335	FDP FILTER,PINK SHEET
	12	SDSF2005M	TAPPING SCREW,CONT PANEL,X5
	13	SDSF2605Z	TAPPING SCREW, X2
	14	SDSF2608Z	TAPPING SCREW, X6
	16	SDSF2608Z	TAPPING SCREW, X2
	17	SDSF2608Z	TAPPING SCREW, X2
	18	SDSF2006Z	TAPPING SCREW, X3
	21	PQ20535D-2	COTROL PANEL ASSY,INCL22-26,EG
		PQ20535A-2	COTROL PANEL ASSY,INCL22-26,E
	22	PQ31773-2	BUTTON(INSTANT REC)
	23	PQ20459-2	BUTTON(TEN KEY)
	24	PQ20459-1-2	BUTTON(TEN KEY)
	26	PQ43059	BASE
	27	PQ20538A-2	COVER ASS'Y,INCL28-30,E
		PQ20538D-2	COVER ASS'Y,INCL.28-30,EG
	28	PQ31777-1-3	DOOR, X2
	29	PQ43060-1-2	EARTH PLATE
	30	PQ43189-1-1	SPRING
	31	PQ43063-1-2	KNOB, X6
	32	PQ43064-1-2	KNOB
	33	PQ43065-1-3	KNOB, X2
	34	PQ43066	KNOB, X2
	35	PQ43221	KNOB(PHONE VOL)
	36	PQ43157	EARTH PLATE
	37	PQ31979	WIRE CLAMP
	38	PU57662-1-1	FOOT, X2
	39	SDSF2608Z	TAPPING SCREW
	40	PQ43153	BUTTON
	41	PQ43057B	BUTTON ASS'Y,POWER,E
		PQ43057C	BUTTON ASS'Y,EG
	42	PQ31763-4	BUTTON(T/V,EJT),EG
		PQ31763-2	BUTTON(T/V,EJT),E
	43	PQ32094-3-3	BUTTON 1(OPE),EG
		PQ32094-1-3	BUTTON 1(OPE),E
	44	PQ32095-3-4	BUTTON 2(OPE),EG
		PQ32095-1-4	BUTTON 2(OPE),E
	45	PQ31768-3	DOOR,EG
		PQ31768	DOOR,E
	46	PQ31769	ARM(L)
	47	PQ31770	ARM(R)
	48	PQ31821	STOPPER, DOOR
	49	SDSF2005Z	TAPPING SCREW, X2
	50	PQ43061-1-1	EARTH PLATE
	51	PQ31949	EARTH PLATE
	52	SDSF2606Z	TAPPING SCREW
	53	PU60047-1-5	DAMP.UNIT ASS'Y
	54	SSSB2606Z	TAPPING SCREW
	55	SDSF2606Z	TAPPING SCREW
	56	PQ43058-3	IR WINDOW,EG
		PQ43058	IR WINDOW,E

3. CHASSIS ASSEMBLY <M3>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
⚠	2	PDV2089A	DRUM ASSY, INCL.31-35
	3	PQ31171-2-7	DRUM SHIELD
	4	SDST2605Z	TAPPING SCREW, X2 D.SHILD
	5	SDSP2608Z	SCREW, X3 DRUM
	6	PQ31242	EARTH SPRING
	7	PUS28277H	CASS.HOUSING ASSY,INCL.41-46
	8	SDSA4014Z	TAPPING SCREW, X2 M.DECK
	9	PQ41396	SPECIAL SCREW, M.DECK
	10	SDSF3010Z	TAPPING SCREW, X7 MOT.BOARD
	11	SDSF3010Z	TAPPING SCREW, X3 TNR/IF BOARD
	12	SDSF3010Z	TAPPING SCREW, X2 HEAT SINK
	13	GPST2608Z	SCREW,X2 VIDEO BOARD
⚠	14	PQ31613	AC COVER
⚠	15	PQ42850-1-1	PWB HOLDER, X2
	16	SDST3006Z	SCREW, X5 P.S BOARD
	17	SDST3006Z	SCREW, FUSE BOARD
	18	SDST2605Z	TAPPING SCREW, X2 C.HOUSING
	19	SDST3006C	TAPPING SCREW, EARTH
	20	SDSA4014Z	TAPPING SCREW, X3 TRANS
	21	SDST2605Z	TAPPING SCREW, X2 BOARD BRAKET
	23	SPST2606Z	SCREW
⚠	24	QMP3980-200	POWER CORD
⚠	25	PQ20370-2-2	TRANS BRACKET
⚠	26	QHS3771-108	STRAIN RELIEF
⚠	27	QMC9021-001	AC OUTLET
	30	PU59082	PRE SHIELD (3)
	31	PDM2001C-8	UPPER DRUM ASSY
	32	PDM4001A	DRUM SCREW ASSY,X2
	33	PDM2053L-11	LOWER DRUM MOTOR ASSY
	34	PDM4015B	BRUSH ASSY
	35	LPSP2606Z	SCREW
⚠	41	PQ42385A	CASSETTE MOTOR ASSY
⚠		OR PQ42385B	CASSETTE MOTOR ASSY
	42	SPSP2603Z	SCREW,X2
	43	PQM30003-19	BELT
	44	SPSP2604Z	SCREW
	45	SPST2605Z	TAPPING SCREW,X2
	46	DV710SR223M16	VARISTOR
	56	PQ43184	BRACKET(VPS), EG
	57	SDSF3010Z	TAPPING SCREW, VPS, EG
⚠	58	PU60379	POWER TRANSFORMER
	62	PQ42596A	BRAKE ASS'Y
	63	PQM30001-212	TENSION SPRING
⚠	64	PU59401-3	SOLENOID
⚠		OR PU60475-3	SOLENOID
	65	PQ31380-1-4	BRAKE BASE
	66	PQM30002-187	COMP. SPRING
	67	SPSP2005Z	SCREW,X2
	68	SDST2608Z	SCREW

4.3 CHASSIS ASSEMBLY < M3 >


18
VIDEO BOARD ASSY <03>
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34
UPPER DRUM BOARD <41>
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32
31
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3
4
CASS. HOUSING BOARD <56>
7
MECHACON BOARD ASSY <04>
14
20
58
33
5
5
PRE/REC BOARD ASSY <43>
16
15
12
21
REGULATOR BOARD ASSY <02>
POWER TRANS BOARD ASSY <01>
F4
F1
27
9
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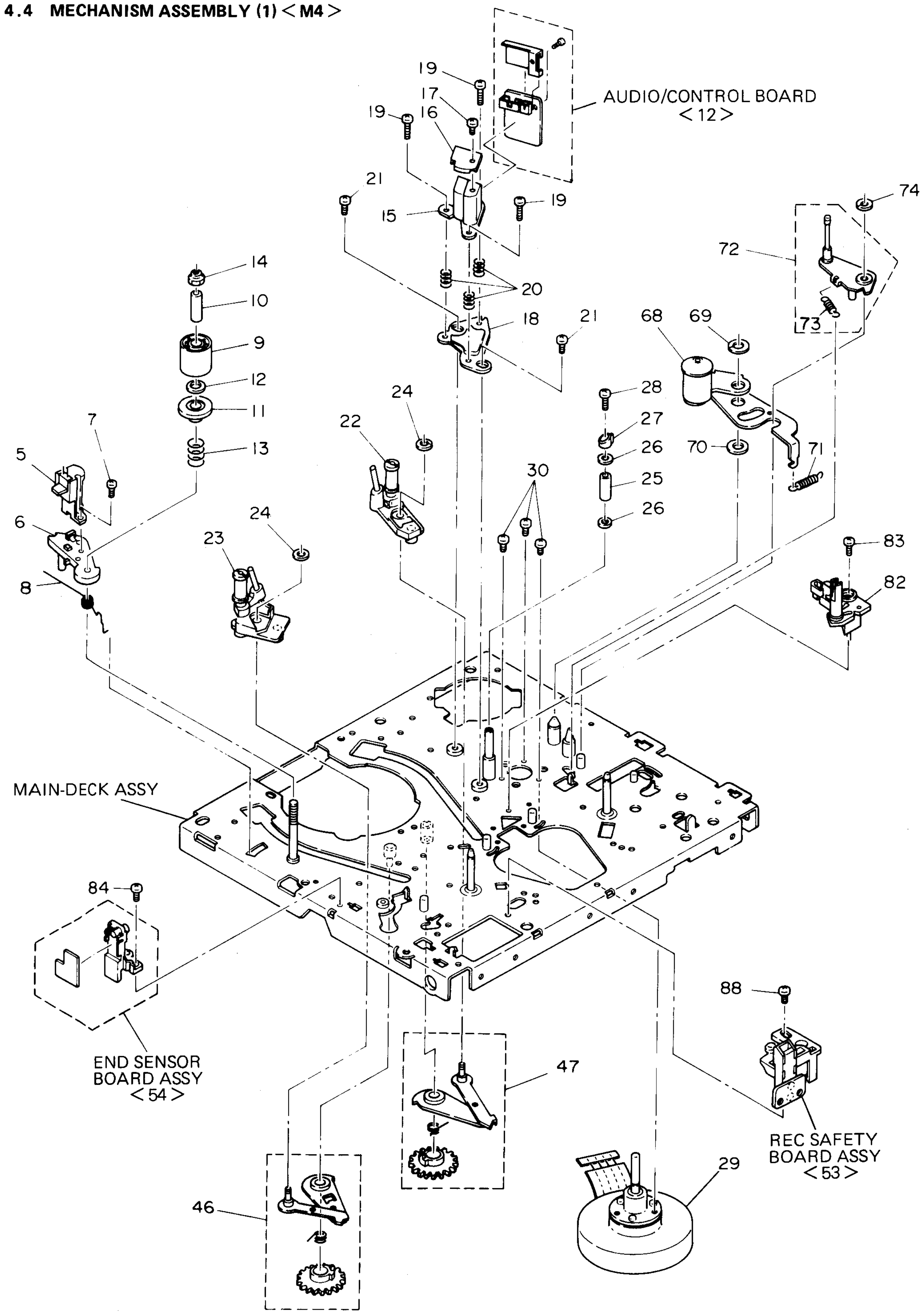
8
MECHANISM ASSY <M4>
P.TRANSISTOR BOARD ASSY <19>
16
16
24
26
TERMINAL BOARD ASSY <06>
RF CONV & MIX
6
19
25
17
23
8
F2
F3
10
10
67
FUSE BOARD ASSY <65>
65
Ⓐ
57 (EG)
11
DIGITAL COLOUR PROCESS BOARD ASSY <62>
68
62
56 (EG)
VPS BOARD ASSY <18> (EG)
MOTHER BOARD ASSY <05>
64
66
63
TUNER/IF BOARD ASSY <07>
SERVO BOARD ASSY <08>
10
AUDIO BOARD ASSY <09>
Ⓐ
FMA BOARD ASSY <13>
CHASSIS
APC BOARD ASSY <61>
DIGITAL BOARD ASSY <20>
DEMOD BOARD ASSY <14>
TIMER BOARD ASSY <15>
JUNCTION BOARD ASSY <16>

4.4 MECHANISM ASSEMBLY (1) < M4 >


AUDIO/CONTROL BOARD
< 12 >
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82
MAIN-DECK ASSY
84
END SENSOR
BOARD ASSY
< 54 >
47
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88
REC SAFETY
BOARD ASSY
< 53 >
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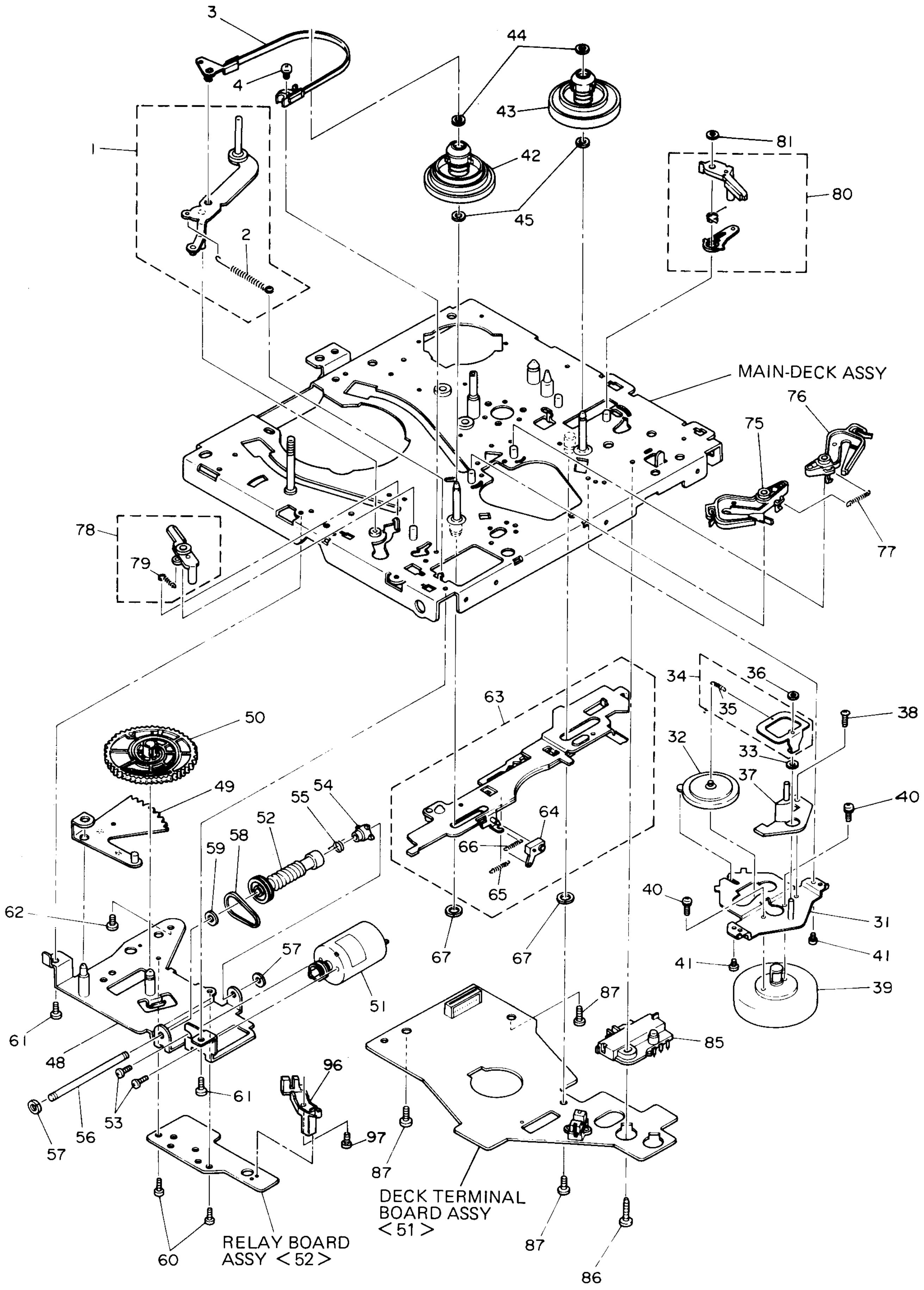
MECHANISM ASSEMBLY (2) < M4 >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MAIN-DECK ASSY
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96
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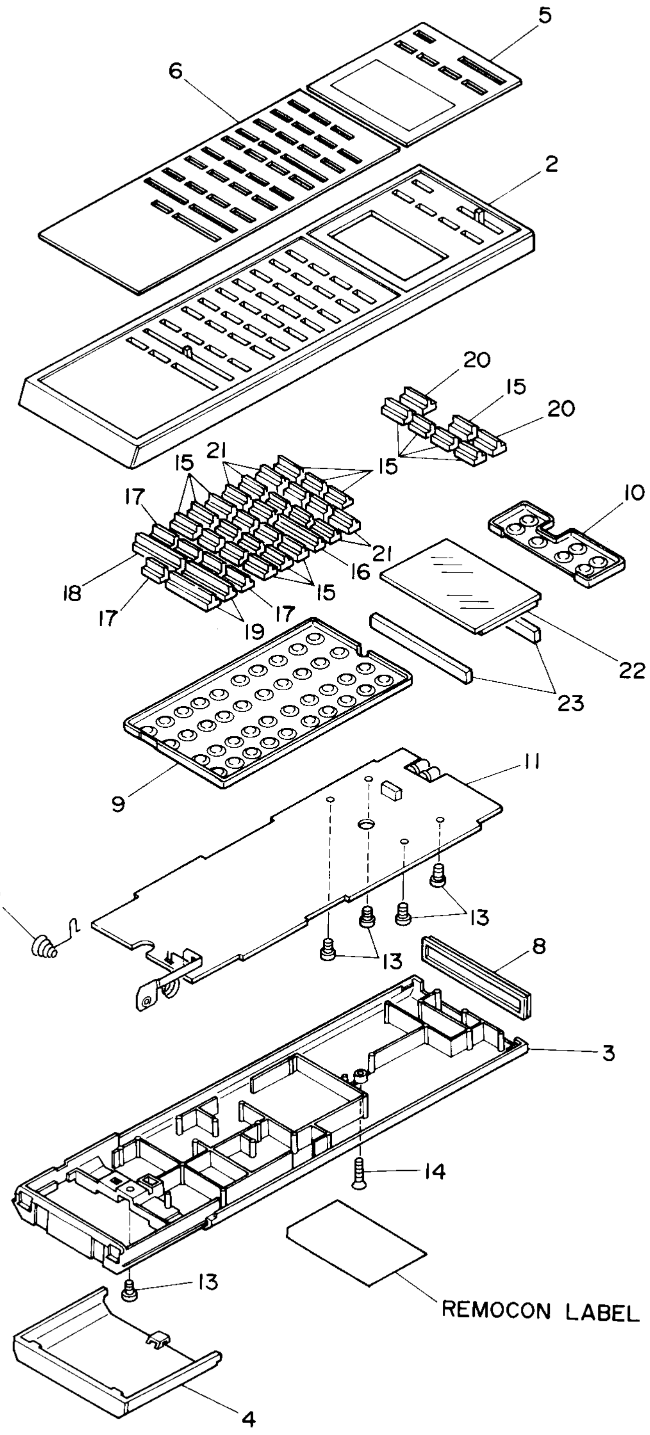
87
85
57
60
RELAY BOARD
ASSY < 52 >
87
DECK TERMINAL
BOARD ASSY
< 51 >
87
86

4. MECHANISM ASSEMBLY <M4>

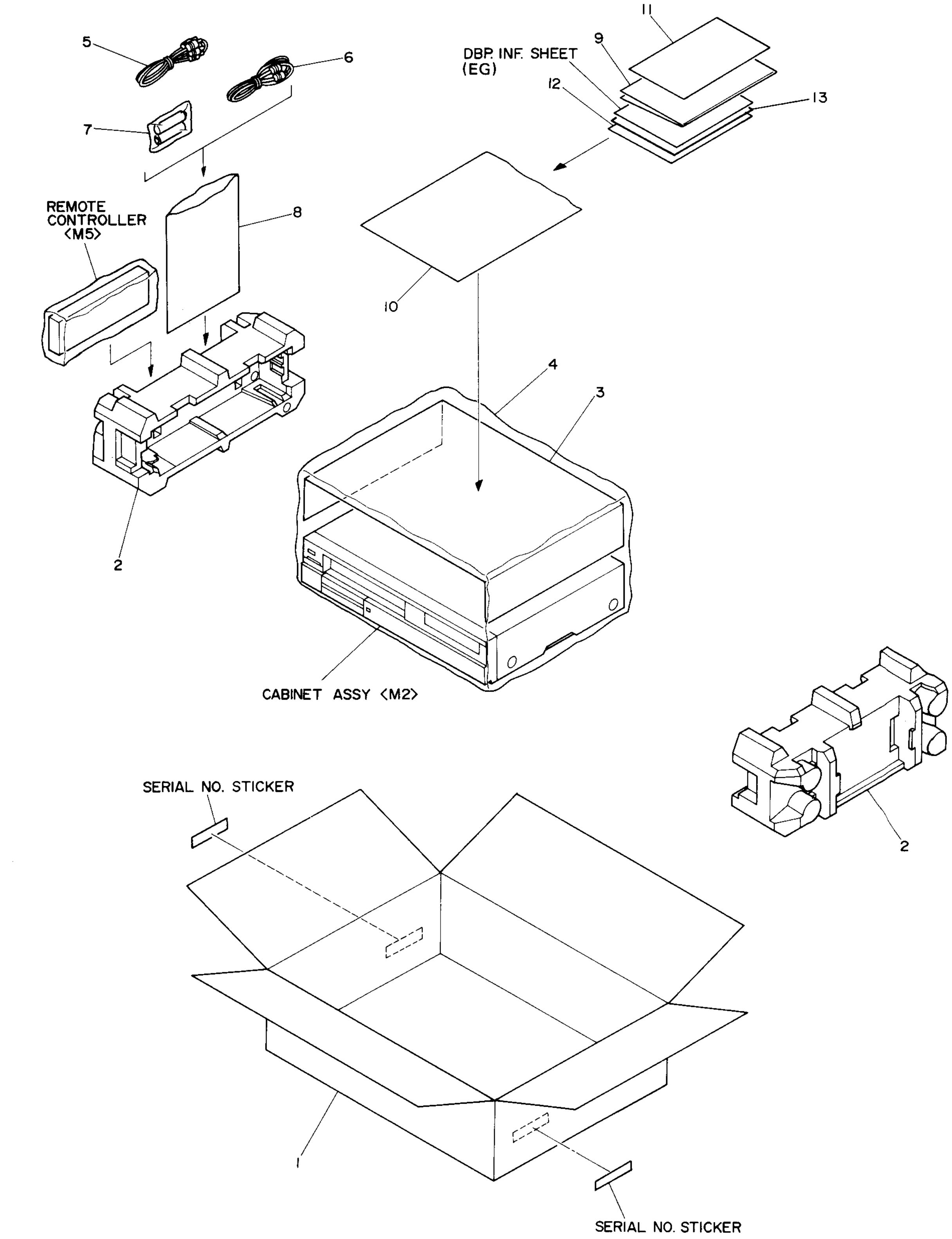
#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	1	PQ41944A-7	TENSION ARM ASSY, INCL.2
	2	PQ41952-3	SPRING
	3	PQ41948A	TENSION BAND ASSY
	4	SDST2606Z	TAPPING SCREW
	5	PU57641-2	FULL ERASE HEAD
	6	PQ31036	FULL ERASE HEAD BASE
	7	SPSG2606Z	SCREW
	8	PQ41954-1-1	TORSION SPRING
	9	PQ41955	IMPEDANCE ROLLER
	10	PQ41956	COLLAR
	11	PQ41957	LOWER FLANGE
	OR	PQ42958	LOWER FLANGE
	12	PQM30018-39	SPACER
	OR	PQM30018-50	SPACER
	13	PQM30002-124	COMPRESSION SPRING
	14	PQ40353	NYLON NUT
	15	PU59253	AUDIO/CONTROL HEAD
	16	PU55535	SHIELD CAP
	17	HPSP2015N	SCREW
	18	PQ42984-2	HEAD BASE
	19	SPSP2608Z	SCREW,X3
	20	PU30080-49	SPRING,X3
	21	SDSP2606Z	SCREW,X2
	22	PQ41963A-2	POLE BASE ASSY (TU)
	23	PQ41969A-2	POLE BASE ASSY (SUP)
	24	PQM30017-5	SLIT WASHER,X2
	25	PU53629-2	TAPE GUIDE
	26	PQ40268-2	GUIDE FLANGE,X2
	27	PQ42999-2-1	G.POLE CAP
	28	SDSP2006Z	SCREW
⚠	29	PU60201V	CAPSTAN MOTOR
	30	SPSP2605N	SCREW,X3
	31	PQ41974A-3	REEL MOTOR BRACKET ASSY
	32	PU58645-1-4	IDLER ARM
	33	Q03093-834	WASHER
	34	PQ41976A-1	SPRING ARM ASSY,INCL.35
	35	PQ42212-1-4	SPRING
	36	PQM30017-22	SLIT WASHER
	37	PQ41978	HOLDER
	38	SPST2606Z	TAPPING SCREW
⚠	39	PU58636W	REEL MOTOR
⚠	OR	PU58636M	REEL MOTOR
	40	LPSP2604Z	SCREW,X2
	41	SPST2606Z	TAPPING SCREW,X2
	42	PU59250-1-2	REEL DISK(SUP)
	43	PU58638-1-2	REEL DISK(TU)
	44	PQM30017-5	SLIT WASHER,X2
	45	Q03093-828	WASHER, X2
	46	PQ41979A-4	LOADING ARM ASSY(SUP)
	47	PQ41985B	LOADING ARM ASSY(TU)
	48	PQ41992A-2	CAM BRACKET SUB ASSY
	49	PQ41994A-3	ARM GEAR SUB ASSY
	50	PQ20250-1-1	CONTROL CAM
	51	PQ41996A	MODE MOTOR ASSY
	52	PQ41998A	WORM ASSY
	53	LPSP2604Z	SCREW,X2
	54	PQ42001	WINDMILL
	55	PQ42002	CLUTCH SPRING
	56	PQ42003	WORM SHAFT
	57	PQM30017-5	SLIT WASHER,X2
	58	PQM30003-20	BELT
	59	PQM30018-22	SPACER
	60	SPST2606Z	SCREW,X2
	61	SPST2606Z	SCREW,X2
	62	SPSP2603Z	SCREW
	63	PQ42038A-3	PLATE ASS'Y, INCL 64-66
	64	PQ31044-1-2	LOCK LEVER
	65	PQM30001-191	TENSION SPRING
	66	PQM30001-211	TENSION SPRING
	67	PQM30017-28	SLIT WASHER,X2
	68	PQ42006B	PINCH ROLLER ARM ASSY
	69	PQM30017-28	SLIT WASHER
	70	Q03093-833	WASHER
	71	PQM30001-229	TENSION SPRING
	72	PQ42013B-4	GUIDE ARM ASSY,INCL.73
	73	PQ42029	SPRING
	74	PQM30017-6	SLIT WASHER
	75	PQ42019A-6	MAIN BRAKE ASSY(SUP)
	76	PQ42020B	MAIN BRAKE ASSY(TU)
	77	PQM30001-216	TENSION SPRING
	78	PQ42021A-3	SUB BRAKE ASSY(SUP),INCL.79
	79	PQ42023-1-2	TENSION SPRING
	80	PQ42037A-2	SUB BRAKE ASSY(TU)
	81	PQM30017-6	SLIT WASHER
	82	PU59452	LED HOLDER,INCL.LE DIODE
	OR	PU58640	LED HOLDER,INCL.LE DIODE
	83	SPST2606Z	TAPPING SCREW
	84	SPST2606Z	TAPPING SCREW
	85	PU58642	SLIDE ENCODER
	86	SDSP2610Z	SCREW
	87	SDSP2606Z	SCREW,X3
	88	SDST2606Z	TAPPING SCREW
	96	PU59251-1-2	R.SENSOR(SUP)
	97	SPSP2603Z	SCREW

4.5 REMOTE CONTROL ASSEMBLY < M5 >



#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
			* 5. REMOTE CONTROLLER < M5 > *
⚠	1	PQ10543U	REMOTE CONTROLLER,INCL.2-23,EG
⚠		PQ10543T	REMOTE CONTROLLER,INCL2-23,E
	2	PQ31909	UPPER CASE
	3	PQ31910	LOWER CASE
	4	PQ31449	BATTERY CAP
	5	PQ31911-3	LCD WINDOW,E
		PQ31911-2	L.C.D.WINDOW, EG
	6	PQ31912-18	TOP PANEL,E
		PQ31912-19	TOP PANEL, EG
	8	PQ10543-003	WINDOW
	9	PQ10543-004	RUBBER SHEET(L)
	10	PQ10543-005	RUBBER SHEET(S)
	11	-	REMOCON BOARD ASSY,REF.<RM>
	12	PQ10355-009	BATTERY TERMINAL
	13	SDSF2005M	TAPPING SCREW, X5
	14	SSSG2010M	TAPPING SCREW
	15	PQ10543-006	BUTTON, X20
	16	PQ10543-007	BUTTON,GRAY (L)
	17	PQ10543-008	BUTTON,BLACK(S),X5
	18	PQ10543-009	BUTTON, RED & WHITE
	19	PQ10543-010	BUTTON, WHITE (L), X2
	20	PQ10543-011	BUTTON, BLUE, X2
	21	PQ10543-012	BUTTON, GRAY(S),X10
	22	PQ10543-013	LCD, E
		PQ10543-014	LCD, EG
	23	PQ10543-015	CONNECTOR, X2

4.6 PACKING ASSEMBLY < M1 >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7
8
11
9
DBP. INF. SHEET
(EG)
12
13
10
REMOTE
CONTROLLER
<M5>
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3
2
CABINET ASSY <M2>
SERIAL NO. STICKER
2
1
SERIAL NO. STICKER

1. PACKING ASSEMBLY <M1>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	1	PQ31705-82	PACKING CASE, E
		PQ31705-84	PACKING CASE, EG
	2	PQ31860A-1	CUSHION ASSY
	3	PQ41026-10	PROTECT SHEET
	4	PQM30021-59-11	POLY BAG
	5	PU56142-3	PIN CORD ASSY
⚠	6	PU59168-3	RF CABLE
⚠	OR	PU59167-3	RF CABLE
	7	UM-3DJ2P	BATTERY
	8	QPGA020-02003	POLY BAG
⚠	9	PU30425-947	INSTRUCTIONS,E
⚠		PU30425-946	INSTRUCTIONS, EG
	10	QPGA025-03505	POLY BAG
	11	BT-20069A	WARRANTY CARD, EG
	12	TCN-3379	TAPE CATALOG
	13	PU60504	INST SHEET (DIG), EG

SECTION 5
ELECTRICAL PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

ABBREVIATIONS IN THIS LIST ARE AS FOLLOWS:

RESISTORS— All resistance values are in ohms (Ω), unless otherwise indicated.

k : 1,000 (Kilo)
M : 1,000,000 (Mega)
Chip R : Chip Resistor
Chip VR : Chip Variable Resistor
Comp. R : Composition Resistor
CR : Carbon Film Resistor
FR : Fusible Resistor
MFR : Metal Film Resistor
MPR : Metal Plate Resistor
OMR : Oxide Metal Film Resistor
PMR : Precision Metal Film Resistor
UFR : Unflammable Resistor
VR : Variable Resistor (Potentiometer)
WR : Wire Wound Resistor

CAPACITORS—All capacitance values are in μF, unless otherwise indicated.

pF : μμF (Pico farad)
C Cap : Caramic Capacitor
Chip Cap : Chip Capacitor
Chip T Cap : Chip Tantalum Capacitor
E Cap : Electrolytic Capacitor
FM Cap : Film Mica Capacitor
LL Cap : Low Leak Current Electrolytic Capacitor
MM Cap : Metalized Mylar Capacitor
MP Cap : Metalized Paper Capacitor
MY Cap : Mylar Capacitor
NP Cap : Non-polar Capacitor
PC Cap : Polycarbonate Capacitor
PP Cap : Polypropylene Capacitor
PS Cap : Polystyrol Capacitor
T Cap : Tantalum Capacitor
TF Cap : Thin Film Capacitor
TR Cap : Trimmer Capacitor

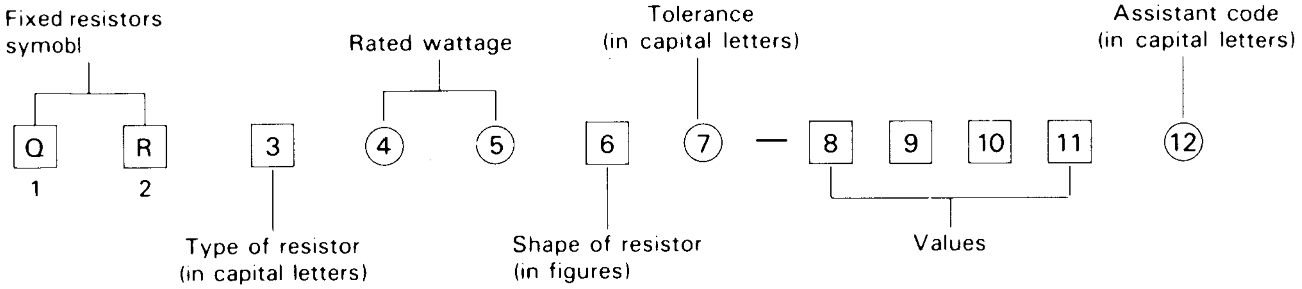
NOTES:

- [2 digits] indicates circuit board symbol number.
- "X " indicates quantity per set.

5.1 STANDARD PART NUMBER CODING

5.1.1 Fixed resistor coding

Fixed resistor part numbers are as follows.


Fixed resistors symobl
Rated wattage
Tolerance (in capital letters)
Assistant code (in capital letters)
Q
R
1
2
3
4
5
6
7
—
8
9
10
11
12
Type of resistor (in capital letters)
Shape of resistor (in figures)
Values

Type of resistor (third digit)

C	Composition resistors
D	Carbon film resistors
F	Unflammable resistors
G	Oxide metal film resistors
H	Fusible resistors
M	Metal plate resistors
S	Metal glazed resistors
V	Precision metal film resistors
W	Wire wound resistors
X	Metal film resistors
Z	Special resistors

Rated wattage (fourth and fifth digits)

A0	1/10 W
18	1/8 W
16	1/6 W
14	1/4 W
12	1/2 W
01	1 W
02	2 W
03	3 W
04	4 W
05	5 W
06	6 W
07	7 W
75	7.5 W
08	8 W
10	10 W
15	15 W
A6	16 W
20	20 W
30	30 W

Tolerance (seventh digit)

F	± 1 %
G	± 2 %
J	± 5 %
K	± 10 %
M	± 20 %

Assistant code (twelfth digit)

A	Small type
B	Small type
S	Small type
Y	Lead taping
Z	Lead taping

Values (eighth — tenth or eleventh digits)

examples:

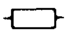
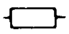
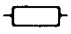
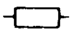
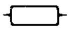
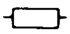
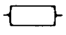
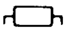
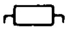
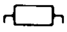
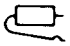
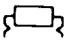
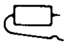
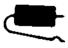
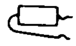
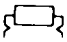
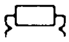
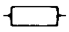
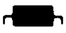
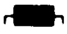
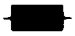
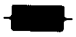
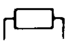
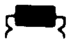
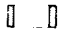
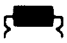
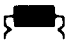
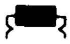
R47		0.47 Ω
4R7		4.7 Ω
470	47 × 10^0	47 Ω
471	47 × 10^1	470 Ω
472	47 × 10^2	4.7 kΩ
473	47 × 10^3	47 kΩ
474	47 × 10^4	470 kΩ
475	47 × 10^5	4.7 MΩ

QRV resistance shown by four digits:

4640	464 × 10^0	464 Ω
4641	464 × 10^1	4.64 kΩ
4642	464 × 10^2	46.4 kΩ

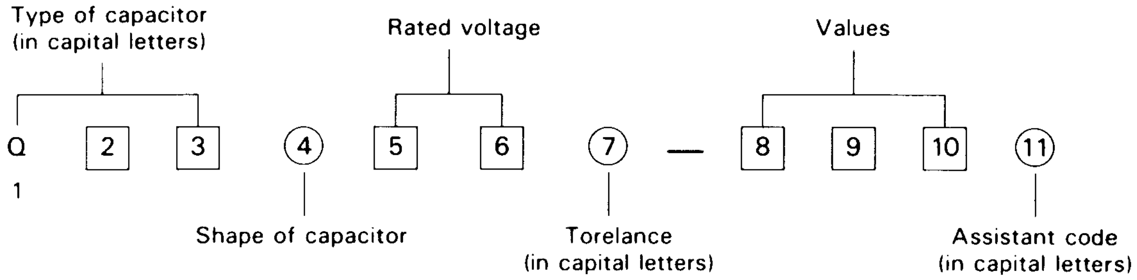
Shape of resistor (sixth digit)

Note: ■ indicates flame retardant resistor.

Shape of resistor \ Type of resistor	C	D	F	G	H	M	S	V	W	X
1										
2										
3										
4										
5									(L) type	
6										
7			Lug (B) type							
8			Lug (A) type				 Chip			
9			Lug (C) type							

5.1.2 Fixed capacitor coding

Fixed capacitor part numbers are as follows.


Type of capacitor
(in capital letters)
Rated voltage
Values
Q
1
2
3
4
5
6
7
—
8
9
10
11
Shape of capacitor
Torelance
(in capital letters)
Assistant code
(in capital letters)

Ceramic capacitors

Type of capacitor (first – third digits)		Shape of capacitor (fourth digit)				
Symbol	Characteristics	Mono-direction	Kink lead	Axial lead	Axial forming lead	Chip
QCC	Ceramic	1		4	5	
QCD	High capacitance					A
QCF	High capacitance	1,4	3			8,A
QCS	Temperature compensation	1	3	4	5	8,A
QCT	Temperature compensation	Special coding				8,A
QCV	Ceramic			1	3	
QCX	Ceramic			1	3	
QCY	High capacitance	1,4	3	6	7	8,A
QCZ	Special type	Special coding				
QCB	Ceramic			B	C	

Electrolytic capacitors

Type of capacitor (first-third digits)		Shape of capacitor (fourth digit)				
Symbol	Characteristics	Tubular	Mono-direction	Anti-stress	Forming	Snap-in
QEB	Low leakage		4	5	6	
QEC	Low leakage		4,8,A	9,B	6,C	
QEE	Tantalum (normal)		4	5	6	
	Tantalum (small)		8			
QEF	Chip tantalum	8 (chip type)				
QEG	Low impedance		4			
QEK	Miniature type		4	5	6	
QEL	Small type		4	5	6	7
QEM	Small type		4,A	5	6	
QEN	Non-polar	2	4	5	6	
QEP	Non-polar (small)		4,A	5,B	6,C	
QER	Miniature type		4	5	6	
QET	Small type	2	4,A	5,B	6,C	7
QEU	Small type		4	5	6	
QEV	Small type		4		6	7
QEW	Normal	2	4	5	6	7

Paper film capacitors

Type of capacitor (first — third digits)		Shape of capacitor (fourth digit)				
Symbol	Characteristics	Tubular	Normal		Flame retardant	
			Mono-direction	Kink lead	Mono-direction	Kink lead
QFA	Metalized polypropylene				7	
QFE	Metalized mylar				5	
QFF	Film mica		4			
QFG	Polypropylene film		4	8		
QFH	Metalized mylar	2	4	3	5,7	6
QFJ	Mylar (special)		4			
QFK	Metalized mylar (small)				5	
QFM	Mylar	2	4	3,7	5	6
QFN	Mylar (small)		4	3		
QFP	Polypropylene		4	3,8		
QFS	Polystyrole	2	4	3		
QFV	Thin film		4	8		
QFZ	Special type	Special coding				

Rated voltage (fifth and sixth digits)

Sixth digit Fifth digit	A	B	C	D	E	F	G	H	J	K	V	W	X
0						3.15	4.0		6.3				
1	10		16	20	25		40	50	63	80	35		
2	100	125	160	200	250	315	400	500	630		350	450	600
3	1000	1250		2000				5000					

Tolerance (seventh digit)

A	$^{+100}_{-10}$ %	M	±20 %
F	±1 %	N	±30 %
G	±2 %	P	$^{+100}_{-0}$ %
H	$^{+50}_{-10}$ %	R	$^{+30}_{-10}$ %
J	±5 %	X	$^{+40}_{-20}$ %
K	±10 %	Z	$^{+80}_{-20}$ %

Values (eighth — tenth digits)

Example : Values are in picofarads

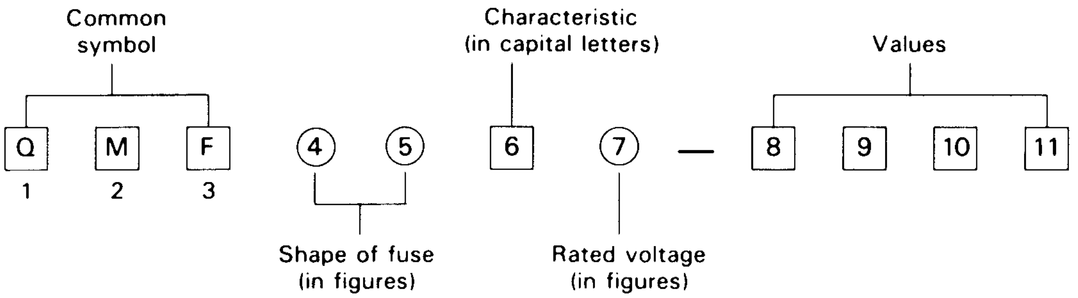
101	10×10^1 pF	100 pF
102	10×10^2 pF	1,000 pF (0.001 μF)
103	10×10^3 pF	10,000 pF (0.01 μF)
104	10×10^4 pF	100,000 pF (0.1 μF)
105	10×10^5 pF	1 μF
5R0		5.0 pF

Assistant code (eleventh digit)

G	Small size
Z	Lead taping
Y	Lead taping

5.1.3 Fuse coding

Standard fuse part numbers are as follows.


Common symbol
Characteristic (in capital letters)
Values
Q
M
F
④
⑤
6
⑦
—
8
9
10
11
1
2
3
Shape of fuse (in figures)
Rated voltage (in figures)

Shape of fuse
(fourth and fifth digits)

51	φ5.2 × 20 mm
60	φ6.4 × 30 mm
61	φ6.35 × 31.8 mm
63	φ6.4 × 30 mm with lead wires
66	φ6.35 × 31.8 mm with lead wires
00	Special type

Rated voltage
(seventh digit)

1	AC125 V
2	AC250 V
3	0.1 – 1 A : AC250 V 1.25 – 6.3 A : AC125 V

Values
(eighth-tenth or eleventh digits)
example:

R63	.... 0.63 A
1R0	.... 1.0 A
2R5	.... 2.5 A
100	.... 10 A
R315	.... 0.315 A
1R25	.... 1.25 A

Characteristics (sixth digit)

Symbol	Fusing Current	Fusing Time	Remarks
A	210 %	Within 2 min.	Anti-rush type (for Europe)
	275 %	0.6 – 10 sec.	
	400 %	0.15 – 3 sec.	
	1000 %	0.02 – 0.3 sec.	
B	210 %	Within 30 min.	Regular fusible type (for SEMKO, Europe)
	275 %	0.05 – 2 sec.	
	400 %	0.01 – 0.3 sec.	
C	135 %	Within 1 hr.	Regular fusible type (for UL, Japan)
	200 %	Within 2 min.	
E	210 %	Within 2 min.	Anti-rush type (for Europe)
	275 %	0.6 – 10 sec.	
	400 %	0.15 – 3 sec.	
	1000 %	0.02 – 0.3 sec.	
J	135 %	Within 1 hr.	Anti-rush type
	200 %	Within 2 min.	
M	135 %	Within 1 hr.	Regular fusible type (for UL)
	200 %	Within 2 min.	
R	160 %	Within 1 hr.	Regular fusible type
	200 %	Within 2 min.	
S	160 %	Within 1 hr.	Anti-rush type
	200 %	Within 2 min.	
	700 % – 2000 %	Within 0.01 sec.	
U	135 %	Within 1 hr.	Anti-rush type (for UL)
	200 %	Within 2 min.	
	800 % – 2000 %	Within 0.01 sec.	

6. POWER SUPPLY BOARD ASSEY <01><02>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB20117B-03	POWER SUPPLY BOARD ASSY
	WR1	PW30101-50AAZZ9	PARALLEL WIRE
	OR	PW30115-50AAZZ9	PARALLEL WIRE

-POWER TRANSFORMER BOARD ASSY < 01 >-

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB20117B1-03	POWER TRANS BOARD ASSY
	D1	10E2	DIODE
	D2	10E2	DIODE
	D3	11E2	DIODE
	OR	1SR35-200A	DIODE
	D4	11E2	DIODE
	OR	1SR35-200A	DIODE
	DS1	D5SB10	DIODE ARRAY
	OR	RBV-601	BRIDGE DIODE
	DS2	D5SB10	DIODE ARRAY
	OR	RBV-601	BRIDGE DIODE
⚠	R1	QRZ0077-100X	FUSIBLE RESISTOR
⚠	C1	QFK52AK-473	M CAPACITOR
	C2	QETB1EM-228	E CAPACITOR
	C3	QETB1EM-478	E CAPACITOR
	C4	QETB1CM-338	E CAPACITOR
	C5	QEHB1JM-476	E CAPACITOR
	C6	QEHB1JM-107	E CAPACITOR
⚠	C101	QCZ9016-472P	CAPACITOR
⚠	HD1	PU57505	FUSE CLIP,X4
⚠	HS1	PU59816	HEAT SINK
⚠	HS2	PU60151-1-1	HEAT SINK
⚠	LF1	PU59779	LINE FILTER
⚠	LF2	PU59586	LINE FILTER
	SCW1	DPSP3008Z	SCREW,X4
⚠	TAB1	A74316	TAB, X2
	SPC1	Q03095-208	WASHER,X2
	CN7	PU43351-104	CAP HOUSING
⚠	F1	QMF51E2-R80	FUSE, NOT INCL. P. TRANS. BOARD ASS'Y
⚠	F4	QMF51E2-2R0	FUSE, NOT INCL. P. TRANS. BOARD ASS'Y

-REGULATOR BOARD ASSEMBLY < 02 >-

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB20117B2-03	REGULATOR BOARD ASSY
	Q1	2SB10150,Y	TRANSISTOR
	OR	2SB1185VQ(DE)	TRANSISTOR
	Q2	2SB644R,S	TRANSISTOR
	Q3	2SB644R,S	TRANSISTOR
	Q4	2SC3311A	TRANSISTOR
	Q5	2SB1068(KU)	TRANSISTOR
	Q6	2SC3311A	TRANSISTOR
	Q11	2SA1020(Y)	TRANSISTOR
	Q12	2SC3311A	TRANSISTOR
	Q13	2SD1449	TRANSISTOR
	D5	HZ12C1	ZENER DIODE
	D6	HZ30-2	ZENER DIODE
	D7	HZ4A2	ZENER DIODE
	D8	HZ6C2	ZENER DIODE
	D9	MA150	DIODE
	D10	MA150	DIODE
	D11	1SS133	DIODE
	R2	QRD181J-102	RESISTOR
	R3	QRD181J-822	RESISTOR
	R4	QRD181J-4R7	RESISTOR
	R5	QRD181J-272	RESISTOR
	R6	QRD181J-272	RESISTOR
	R7	QRD181J-682	RESISTOR
	R8	QRD181J-122	RESISTOR
	R9	QRD181J-272	RESISTOR
	R10	QRD181J-332	RESISTOR
	R11	QRD181J-682	RESISTOR
	R12	QRD181J-103	RESISTOR
	R13	QRD181J-272	RESISTOR
	R14	QRD181J-331	RESISTOR
	R15	QRD181J-471	RESISTOR
	R16	QRD181J-271	RESISTOR
	R17	QVZ3521-331	V RESISTOR, DC 5V
	R18	QRD181J-222	RESISTOR
	R19	QRD181J-103	RESISTOR
	R20	QRD181J-222	RESISTOR
	R21	QRD181J-561	RESISTOR
	R24	QRD181J-331	RESISTOR
	R25	QRD181J-331	RESISTOR
	R26	QRD181J-681	RESISTOR
	R27	QRD181J-102	RESISTOR
	C7	QETC1HM-106	E CAPACITOR
	C8	QETC1HM-226	E CAPACITOR
	C9	QETC1HM-107	E CAPACITOR
	C10	QETC1CM-476	E CAPACITOR
	C11	QCF31HP-103	CAPACITOR
	C12	QETC1CM-107	E CAPACITOR
	C13	QETC1CM-476	E CAPACITOR
	C14	QETC1CM-107	E CAPACITOR
	C15	QETC1VM-226	E CAPACITOR
	C17	QETC1CM-336	E CAPACITOR
	C20	QCF31HP-103	CAPACITOR
	C21	QCF31HP-103	CAPACITOR
	C22	QCF32HP-102	CAPACITOR
⚠	RY1	PU59457	RELAY
⚠	CP1	ICP-F25	CIRCUIT PROTECTOR
	TP	PU55774	TEST PIN, X3
	CN1	PU58931-16	HOUSING
	CN2	PU58844-109	CAP HOUSING
	CN6	PU58844-102	CAP HOUSING

7. MAIN BOARD ASSEMBLY <03>< 04>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB10074B-03	MAIN BOARD ASSY

-VIDEO BOARD ASSEMBLY < 03 >-

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB10074B1	VIDEO BOARD ASSY
	IC101	PU22282B	Y.MODULE
	IC102	7VT12	IC
	IC201	TA7374P	IC
⚠	IC202	MSM6989RS	IC
⚠	IC301	PU22046A	C.MODULE
	IC351	BA7007	IC
	IC401	AN3592K	IC
	Q101	2SC1740S(QRS)	TRANSISTOR
	Q102	2SC1740S(QRS)	TRANSISTOR
	Q103	DTC124ES	TRANSISTOR
	Q104	2SC1740S(QRS)	TRANSISTOR
	Q105	2SC1740S(QRS)	TRANSISTOR
	Q106	2SC1740S(QRS)	TRANSISTOR
	Q111	2SC1740S(QRS)	TRANSISTOR
	Q112	2SA933S(RS)	TRANSISTOR
	Q113	2SA933S(RS)	TRANSISTOR
	Q201	DTC124ES	TRANSISTOR
	Q202	DTC124ES	TRANSISTOR
	Q203	DTC124ES	TRANSISTOR
	Q204	DTC124ES	TRANSISTOR
	Q208	2SC1740S(QRS)	TRANSISTOR
	Q209	2SC1740S(QRS)	TRANSISTOR
	Q210	2SC1740S(QRS)	TRANSISTOR
	Q211	2SA1309R,S	TRANSISTOR
	Q212	2SC1740S(QRS)	TRANSISTOR
	Q213	2SC1740S(QRS)	TRANSISTOR
	Q215	2SC1740S(QRS)	TRANSISTOR
	Q216	DTC124ES	TRANSISTOR
	Q217	DTC144WS	TRANSISTOR
	Q222	2SA933S(RS)	TRANSISTOR
	Q301	2SC1740S(QRS)	TRANSISTOR
	Q302	2SC1740S(QRS)	TRANSISTOR
	Q311	DTC124ES	TRANSISTOR
	Q312	DTC144WS	TRANSISTOR
	Q313	DTC144ES	TRANSISTOR
	Q314	DTC144ES	TRANSISTOR
	Q315	DTC144WS	TRANSISTOR
	Q316	DTC144ES	TRANSISTOR
	Q317	2SC1740S(QRS)	TRANSISTOR
	Q318	2SC1740S(QRS)	TRANSISTOR
	Q319	2SC1740S(QRS)	TRANSISTOR
	Q320	DTC144ES	TRANSISTOR
	Q321	DTC144ES	TRANSISTOR
	Q351	2SC1740S(QRS)	TRANSISTOR
	Q352	2SC1740S(QRS)	TRANSISTOR
	Q401	2SC1740S(QRS)	TRANSISTOR
	Q402	2SC1740S(QRS)	TRANSISTOR
	Q403	DTA144ES	TRANSISTOR
	Q404	2SC1740S(QRS)	TRANSISTOR
	Q405	2SC1740S(QRS)	TRANSISTOR
	Q406	2SC1740S(QRS)	TRANSISTOR
	Q407	2SC1740S(QRS)	TRANSISTOR
	Q411	2SC1740S(QRS)	TRANSISTOR
	Q412	DTC124ES	TRANSISTOR
	Q414	2SC1740S(QRS)	TRANSISTOR
	Q415	DTC124ES	TRANSISTOR
	Q416	DTC124ES	TRANSISTOR
	Q417	DTC124ES	TRANSISTOR
	Q418	DTC144ES	TRANSISTOR
	Q419	DTC143ES	TRANSISTOR
	Q420	DTC124ES	TRANSISTOR
	Q421	DTC124ES	TRANSISTOR
	Q422	DTC124ES	TRANSISTOR
	Q501	2SA933(S)	TRANSISTOR
		OR 2SA933S(S)	TRANSISTOR
	Q502	2SB643R,S	TRANSISTOR
	Q503	DTC144WS	TRANSISTOR
	Q504	2SB643R,S	TRANSISTOR
	Q505	2SB643R,S	TRANSISTOR
	Q506	DTC124ES	TRANSISTOR
	Q507	DTC124ES	TRANSISTOR
	D101	MA165	DIODE
		OR 1SS133	DIODE
	D102	MA165	DIODE
		OR 1SS133	DIODE
	D103	OA90	DIODE
	D104	OA90	DIODE
	D105	MA165	DIODE
		OR 1SS133	DIODE
	D106	MA165	DIODE
		OR 1SS133	DIODE
	D203	RD9.1ESB2	ZENER DIODE
	D207	MA165	DIODE
		OR 1SS133	DIODE
	D208	MA165	DIODE
		OR 1SS133	DIODE
	D209	MA165	DIODE
		OR 1SS133	DIODE
	D211	MA165	DIODE
		OR 1SS133	DIODE
	D212	1SS133	DIODE
	D231	MA165	DIODE
		OR 1SS133	DIODE
	D301	MA165	DIODE
		OR 1SS133	DIODE
	D302	MA165	DIODE
		OR 1SS133	DIODE
	D303	MA165	DIODE
		OR 1SS133	DIODE
	D305	MA165	DIODE
		OR 1SS133	DIODE
	D306	MA165	DIODE
		OR 1SS133	DIODE
	D307	MA165	DIODE
		OR 1SS133	DIODE
	D308	MA165	DIODE
		OR 1SS133	DIODE
	D351	MA165	DIODE
		OR 1SS133	DIODE
	D352	MA165	DIODE
		OR 1SS133	DIODE
	D353	MA165	DIODE
		OR 1SS133	DIODE
	D354	MA165	DIODE
		OR 1SS133	DIODE
	D355	MA165	DIODE
		OR 1SS133	DIODE
	D356	MA165	DIODE
		OR 1SS133	DIODE
	D357	MA165	DIODE
		OR 1SS133	DIODE

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	D358	MA165	DIODE
	OR	1SS133	DIODE
	D403	MA165	DIODE
	OR	1SS133	DIODE
	D405	MA165	DIODE
	OR	1SS133	DIODE
	D407	MA165	DIODE
	OR	1SS133	DIODE
	D408	MA165	DIODE
	OR	1SS133	DIODE
	D409	MA165	DIODE
	OR	1SS133	DIODE
	D501	MA165	DIODE
	OR	1SS133	DIODE
	D502	MA165	DIODE
	OR	1SS133	DIODE
	D503	MA165	DIODE
	OR	1SS133	DIODE
	D504	MA165	DIODE
	OR	1SS133	DIODE
	D505	MA165	DIODE
	OR	1SS133	DIODE
	D507	MA165	DIODE
	OR	1SS133	DIODE
	D615	MA165	DIODE
	OR	1SS133	DIODE
	R101	QRD161J-332	RESISTOR
	R102	QRD161J-152	RESISTOR
	R103	QRD161J-102	RESISTOR
	R104	QRD161J-122	RESISTOR
	R105	QRD161J-821	RESISTOR
	R106	QRD161J-471	RESISTOR
	R107	QRD161J-102	RESISTOR
	R108	QRD161J-152	RESISTOR
	R109	QRD161J-101	RESISTOR
	R110	QVZ3518-222	V RESISTOR,SP PB FREQ & CH BAL
	R112	QRD161J-561	RESISTOR
	R113	QRD161J-222	RESISTOR
	R114	QRD161J-222	RESISTOR
	R115	QRD161J-391	RESISTOR
	R116	QRD161J-333	RESISTOR
	R117	QRD161J-333	RESISTOR
	R119	QVZ3518-102	V RESISTOR, REC FM LEVEL
	R120	QRD161J-221	RESISTOR
	R121	QRD161J-472	RESISTOR
	R122	QRD161J-333	RESISTOR
	R123	QRD161J-562	RESISTOR
	R124	QRD161J-225	RESISTOR
	R125	QRD161J-475	RESISTOR
	R126	QRD161J-335	RESISTOR
	R127	QRD161J-102	RESISTOR
	R128	QRD161J-152	RESISTOR
	R130	QRD161J-684	RESISTOR
	R131	QRD162J-824	RESISTOR
	R132	QRD161J-562	RESISTOR
	R133	QRD161J-152	RESISTOR
	R136	QRD161J-102	RESISTOR
	R138	QRD161J-681	RESISTOR
	R141	QRD161J-102	RESISTOR
	R142	QRD161J-272	RESISTOR
	R143	QRD161J-181	RESISTOR
	R144	QRD161J-821	RESISTOR
	R145	QRD161J-181	RESISTOR
	R146	QRD121J-391	RESISTOR
	R147	QRD161J-223	RESISTOR
	R148	QRD161J-472	RESISTOR
	R149	QRD161J-682	RESISTOR
	R150	QRD162J-475	RESISTOR
	R202	QVZ3518-102	V RESISTOR,LP PB FREQ & CH BAL
	R203	QRD161J-471	RESISTOR
	R204	QRD162J-101	RESISTOR
	R211	QRD162J-562	RESISTOR
	R214	QRD161J-391	RESISTOR
	R215	QRD161J-122	RESISTOR
	R216	QRD161J-681	RESISTOR
	R217	QRD121J-181	CARBON RESISTOR
	R218	QRD161J-103	RESISTOR
	R219	QRD161J-222	RESISTOR
	R220	QRD161J-393	RESISTOR
	R221	QRD161J-473	RESISTOR
	R222	QRD161J-332	RESISTOR
	R223	QVZ3518-682	V RESISTOR, 0.5H DELAY
	R224	QRD161J-102	RESISTOR
	R225	QRD161J-122	RESISTOR
	R226	QRD161J-153	RESISTOR
	R227	QRD161J-223	RESISTOR
	R228	QRD161J-561	RESISTOR
	R229	QRD161J-681	RESISTOR
	R230	QRD161J-681	RESISTOR
	R231	QRD161J-681	RESISTOR
	R232	QRD161J-471	RESISTOR
	R233	QRD161J-222	RESISTOR
	R234	QRD161J-102	RESISTOR
	R235	QRD161J-222	RESISTOR
	R236	QRD161J-103	RESISTOR
	R238	QRD161J-822	RESISTOR
	R239	QRD161J-122	RESISTOR
	R240	QRD162J-563	RESISTOR
	R241	QRD162J-822	RESISTOR
	R242	QRD161J-223	RESISTOR
	R243	QRD161J-103	RESISTOR
	R244	QRD161J-103	RESISTOR
	R245	QRD161J-103	RESISTOR
	R246	QRD161J-333	RESISTOR
	R267	QRD161J-391	RESISTOR
	R301	QRD161J-102	RESISTOR
	R302	QRD161J-102	RESISTOR
	R303	QRD161J-473	RESISTOR
	R304	QRD161J-272	RESISTOR
	R305	QRD161J-681	RESISTOR
	R306	QRD161J-102	RESISTOR
	R307	QRD161J-102	RESISTOR
	R311	QRD161J-562	RESISTOR
	R312	QRD161J-221	RESISTOR
	R313	QRD161J-102	RESISTOR
	R316	QRD161J-221	RESISTOR
	R317	QRD161J-391	RESISTOR
	R318	QRD161J-122	RESISTOR
	R319	QRD161J-393	RESISTOR
	R320	QRD161J-103	RESISTOR
	R321	QRD161J-103	RESISTOR
	R322	QVZ3518-331	V RESISTOR, SP REC COLOR LEV
	R323	QRD162J-821	RESISTOR
	R325	QRD161J-102	RESISTOR
	R326	QRD161J-472	RESISTOR
	R327	QRD161J-274	RESISTOR
	R328	QVZ3518-223	V RESISTOR, VXO
	R329	QRD161J-103	RESISTOR
	R330	QRD161J-122	RESISTOR
	R331	QRD161J-222	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R332	QRD161J-103	RESISTOR
	R333	QRD161J-103	RESISTOR
	R334	QRD161J-102	RESISTOR
	R335	QRD161J-122	RESISTOR
	R336	QRD161J-471	RESISTOR
	R337	QRD161J-152	RESISTOR
	R338	QRD161J-223	RESISTOR
	R339	QRD161J-682	RESISTOR
	R340	QRD161J-102	RESISTOR
	R341	QRD161J-181	RESISTOR
	R342	QRD161J-391	RESISTOR
	R343	QRD161J-331	RESISTOR
	R344	QRD161J-562	RESISTOR
	R346	QRD161J-222	RESISTOR
	R347	QRD161J-153	RESISTOR
	R348	QRD161J-103	RESISTOR
	R351	QRD161J-332	RESISTOR
	R352	QRD161J-154	RESISTOR
	R353	QRD161J-563	RESISTOR
	R354	QRD161J-182	RESISTOR
	R355	QVZ3518-472	V RESISTOR,SECAM DET
	R356	QRD161J-103	RESISTOR
	R357	QRD161J-562	RESISTOR
	R358	QRD161J-333	RESISTOR
	R359	QRD161J-393	RESISTOR
	R360	QRD161J-102	RESISTOR
	R361	QRD161J-393	RESISTOR
	R362	QRD161J-393	RESISTOR
	R363	QRD161J-822	RESISTOR
	R364	QRD161J-223	RESISTOR
	R365	QRD161J-333	RESISTOR
	R401	QVZ3518-222	V RESISTOR,1H DELAY COLOR LEV
	R402	QRD161J-222	RESISTOR
	R403	QRD161J-272	RESISTOR
	R404	QRD161J-821	RESISTOR
	R405	QRD161J-222	RESISTOR
	R407	QRD161J-104	RESISTOR
	R408	QRD161J-391	RESISTOR
	R409	QRD161J-123	RESISTOR
	R410	QRD161J-332	RESISTOR
	R413	QRD161J-223	RESISTOR
	R414	QRD161J-103	RESISTOR
	R415	QRD161J-154	RESISTOR
	R416	QRD161J-221	RESISTOR
	R417	QRD161J-393	RESISTOR
	R418	QVZ3518-473	V RESISTOR,0.5H DELAY JUMP DET
	R420	QRD161J-122	RESISTOR
	R421	QRD161J-101	RESISTOR
	R423	QRD161J-222	RESISTOR
	R424	QRD161J-561	RESISTOR
	R425	QRD161J-561	RESISTOR
	R426	QRD161J-393	RESISTOR
	R427	QRD161J-223	RESISTOR
	R428	QRD161J-391	RESISTOR
	R429	QRD161J-223	RESISTOR
	R431	QRD161J-682	RESISTOR
	R432	QRD161J-104	RESISTOR
	R433	QRD161J-473	RESISTOR
	R434	QRD161J-472	RESISTOR
	R435	QRD161J-682	RESISTOR
	R436	QRD161J-103	RESISTOR
	R437	QRD161J-153	RESISTOR
	R438	QVZ3518-331	V RESISTOR, LP REC COLOR LEVEL
	R439	QRD161J-822	RESISTOR
	R440	QRD161J-102	RESISTOR
	R441	QRD161J-272	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R442	QRD162J-683	RESISTOR
	R443	QRD161J-183	RESISTOR
	R444	QRD161J-333	RESISTOR
	R446	QRD161J-562	RESISTOR
	R448	QRD161J-562	RESISTOR
	R501	QRD161J-393	RESISTOR
	R502	QRD161J-682	RESISTOR
	R503	QRD161J-393	RESISTOR
	R504	QRD161J-103	RESISTOR
	R505	QRD161J-103	RESISTOR
	R506	QRD161J-393	RESISTOR
	R507	QRD161J-103	RESISTOR
	R508	QRD161J-393	RESISTOR
	R509	QRD161J-103	RESISTOR
	R510	QRD161J-103	RESISTOR
	R511	QRD161J-103	RESISTOR
	R512	QRD161J-332	RESISTOR
	C101	QCVB1CN-103	CAPACITOR
	C102	QCSB1HJ-680	CAPACITOR
	C103	QCSB1HJ-330	CAPACITOR
	C104	QET60JM-476	E CAPACITOR
	C105	QCVB1CN-103	CAPACITOR
	C106	QCSB1HJ-470	CAPACITOR
	C107	QCVB1CN-103	CAPACITOR
	C108	QCVB1CN-103	CAPACITOR
	C110	QCVB1CN-103	CAPACITOR
	C112	QCVB1CN-103	CAPACITOR
	C113	QCVB1CN-103	CAPACITOR
	C114	QCBB1HJ-121	CAPACITOR
	C115	QCBB1HJ-121	CAPACITOR
	C116	QCSB1HJ-360	CAPACITOR
	C117	QET60JM-476	E CAPACITOR
	C118	QCVB1CN-103	CAPACITOR
	C121	QCBB1HJ-151	CAPACITOR
	C122	QCSB1HJ-330	CAPACITOR
	C123	QET61HM-105	E CAPACITOR
	C124	QETB1HM-105	E CAPACITOR
	C125	QCBB1HJ-151	CAPACITOR
	C126	QCBB1HJ-151	CAPACITOR
	C127	QET61HM-225	E CAPACITOR
	C128	QER60JM-107	E CAPACITOR
	C129	QER60JM-107	E CAPACITOR
	C130	QET61EM-335	E CAPACITOR
	C131	QER41HM-105	E CAPACITOR
	C132	QER41HM-225	E CAPACITOR
	C133	QER40JM-476	E CAPACITOR
	C134	QER41HM-225	E CAPACITOR
	C135	QER41CM-106	E CAPACITOR
	C136	QEN41EM-335	NP E CAPACITOR
	C137	QEM51AK-107	E CAPACITOR
	C138	QCVC1CN-103	CAPACITOR
	C139	QCBB1HJ-181	CAPACITOR
	C140	QCBB1HJ-121	CAPACITOR
	C141	QCSB1HJ-560	CAPACITOR
	C142	QCSB1HJ-220	CAPACITOR
	C144	QCBB1HJ-121	CAPACITOR
	C145	QCBB1HJ-151	CAPACITOR
	C146	QET61EM-475	E CAPACITOR
	C147	QET61CM-476	E CAPACITOR
	C148	QCVB1CN-103	CAPACITOR
	C149	QCSB1HJ-220	CAPACITOR
	C151	QCVC1CN-103	CAPACITOR
	C152	QCVB1CN-103	CAPACITOR
	C153	QCVB1CN-103	CAPACITOR
	C154	QCSB1HJ-390	CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C201	QCSB1HJ-160	CAPACITOR
	C202	QFN31HJ-223	M CAPACITOR
	C211	QCVB1CN-103	CAPACITOR
	C212	QCSB1HJ-100	CAPACITOR
	C213	QCVB1CN-103	CAPACITOR
	C214	QEK60JM-476	E CAPACITOR
	C217	QFN31HJ-102	M CAPACITOR
	C218	QEK61EM-475	E CAPACITOR
	C219	QCBB1HJ-102	CAPACITOR
	C220	QFN31HJ-473	M CAPACITOR
	C221	QEK61AM-107	E CAPACITOR
	C222	QCVB1CN-103	CAPACITOR
	C224	QEK61HM-104	E CAPACITOR
	C225	QEK61EM-475	E CAPACITOR
	C226	QCVC1CN-103	CAPACITOR
	C227	QCVB1CN-103	CAPACITOR
	C229	QEK60JM-476	E CAPACITOR
	C230	QCVB1CN-103	CAPACITOR
	C233	QER41CM-106	E CAPACITOR
	C234	QER41CM-476	E CAPACITOR
	C235	QCVB1CN-103	CAPACITOR
	C236	QCSB1HJ-330	CAPACITOR
	C237	QCSB1HJ-270	CAPACITOR
	C238	QER41AM-476	E CAPACITOR
	C239	QCSB1HJ-200	CAPACITOR
	C241	QCVB1CN-103	CAPACITOR
	C242	QCSB1HJ-330	CAPACITOR
	C243	QCBB1HJ-221	CAPACITOR
	C244	QER40JM-107	E CAPACITOR
	C245	QCVB1CN-103	CAPACITOR
	C246	QEK61HM-104	E CAPACITOR
	C247	QEK61HM-105	E CAPACITOR
	C248	QETA1AM-476	E CAPACITOR
	C249	QER41HM-335	E CAPACITOR
	C250	QEK41HM-225	E CAPACITOR
	C251	QCS31HJ-561	CAPACITOR
	C252	QCC11EK-223ZR	CAPACITOR
	C302	QCBB1HJ-820	CAPACITOR
	C303	QCBB1HJ-102	CAPACITOR
	C304	QCVB1CN-103	CAPACITOR
	C305	QFN31HJ-473	M CAPACITOR
	C306	QCSB1HJ-470	CAPACITOR
	C311	QET61CM-106	E CAPACITOR
	C312	QET61HM-474	E CAPACITOR
	C313	QFN31HJ-563	M CAPACITOR
	C314	QET61CM-106	E CAPACITOR
	C315	QET61HM-225	E CAPACITOR
	C316	QET61EM-335	E CAPACITOR
	C317	QFN31HJ-473	M CAPACITOR
	C318	QCVB1CN-103	CAPACITOR
	C319	QET61EM-475	E CAPACITOR
	C320	QEM51AK-107	E CAPACITOR
	C321	QCVB1CN-103	CAPACITOR
	C322	QET61HM-105	E CAPACITOR
	C323	QET61HM-475	E CAPACITOR
	C324	QET61HM-475	E CAPACITOR
	C325	QCVB1CN-103	CAPACITOR
	C326	QCVB1CN-103	CAPACITOR
	C327	QET61HM-105	E CAPACITOR
	C328	QFN31HJ-223	M CAPACITOR
	C329	QCT25CH-220	CAPACITOR
	C330	QCVB1CN-103	CAPACITOR
	C331	QET61CM-106	E CAPACITOR
	C332	QCBB1HJ-101	CAPACITOR
	C333	QCVB1CN-103	CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C334	QCBB1HJ-102	CAPACITOR
	C335	QET61AM-476	E CAPACITOR
	C336	QCVB1CN-103	CAPACITOR
	C337	QCSB1HJ-100	CAPACITOR
	C338	QCBB1HJ-681	CAPACITOR
	C339	QCC11EJ-104	CAPACITOR
	C340	QCC11EK-273	CAPACITOR
	OR	QCC11EK-273ZR	CAPACITOR
	C351	QET61CM-476	E CAPACITOR
	C352	QCVB1CN-103	CAPACITOR
	C353	QET61AM-336	E CAPACITOR
	C354	QFN31HJ-182	M CAPACITOR
	C355	QFN31HJ-272	M CAPACITOR
	C356	QFN31HJ-223	M CAPACITOR
	C357	QETB1CM-106	E CAPACITOR
	C358	QCVB1CN-103	CAPACITOR
	C359	QCBB1HJ-102	CAPACITOR
	C401	QCVB1CN-103	CAPACITOR
	C402	QCSB1HJ-220	CAPACITOR
	C403	QCSB1HJ-220	CAPACITOR
	C404	QCVB1CN-103	CAPACITOR
	C406	QET61HM-105	E CAPACITOR
	C407	QET61HM-105	E CAPACITOR
	C408	QET61EM-475	E CAPACITOR
	C409	QET61HM-105	E CAPACITOR
	C410	QFN31HJ-152	M CAPACITOR
	C411	QFN31HJ-332	M CAPACITOR
	C412	QCVB1CN-103	CAPACITOR
	C413	QCVB1CN-103	CAPACITOR
	C414	QET60JM-107	E CAPACITOR
	C415	QCVB1CN-103	CAPACITOR
	C416	QFN31HJ-222	M CAPACITOR
	C417	QFN31HJ-103	M CAPACITOR
	C418	QFN31HJ-273	M CAPACITOR
	C419	QFN31HJ-222	M CAPACITOR
	C420	QET61HM-105	E CAPACITOR
	C421	QCVB1CN-103	CAPACITOR
	C422	QCVB1CN-103	CAPACITOR
	C423	QCSB1HJ-680	CAPACITOR
	C424	QCVB1CN-103	CAPACITOR
	C426	QCVB1CN-103	CAPACITOR
	C427	QCVB1CN-103	CAPACITOR
	C432	QFN31HJ-103	M CAPACITOR
	C433	QFN31HJ-104	M CAPACITOR
	C436	QET51AM-226	E CAPACITOR
	C437	QCBB1HJ-181	CAPACITOR
	L101	PU48530-101K	PEAKING COIL
	L102	PU59152-560J	PEAKING COIL
	L103	PU59152-270J	PEAKING COIL
	L104	PU59152-180J	PEAKING COIL
	L106	PU59152-221J	PEAKING COIL
	L107	PU59152-470J	PEAKING COIL
	L108	PU59152-270J	PEAKING COIL
	L109	PU48530-101K	PEAKING COIL
	L111	PU59152-121J	PEAKING COIL
	L112	PU59152-180J	PEAKING COIL
	L113	PU59152-180J	PEAKING COIL
	L114	PU48530-471J	PEAKING COIL
	L115	PU59152-121J	PEAKING COIL
	L116	PU48530-101K	PEAKING COIL
	L117	PU59152-560J	PEAKING COIL
	L118	PU59152-680J	PEAKING COIL
	L119	PU48530-681J	PEAKING COIL
	L121	PU48530-101K	PEAKING COIL
	L122	PU48530-331J	PEAKING COIL

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	L201	PU48530-101K	PEAKING COIL
	L202	PU48530-101K	PEAKING COIL
	L203	PU48530-101K	PEAKING COIL
	L204	PU59152-560J	PEAKING COIL
	L205	PU59152-390J	PEAKING COIL
	L206	PU48530-101K	PEAKING COIL
	L207	PU48530-101K	PEAKING COIL
	L302	PU48530-222J	PEAKING COIL
	L303	PU54223-271J	PEAKING COIL
	L311	PU47051-822	COIL
	L312	PU48530-101K	PEAKING COIL
	L313	PU59153-101K	INDUCTOR
	L314	PU59152-150J	PEAKING COIL
	L315	PU59152-680J	PEAKING COIL
	L316	PU48530-101K	PEAKING COIL
	L351	PU49057	LC BLOCK,1/2 FH TUNING
	L352	PU53223-101J	PEAKING COIL
	L353	PU47051-562	COIL
	L401	PU49057	LC BLOCK,APC ERROR PHASE
	L402	PU57139	LC BLOCK
	L403	PU59152-330J	PEAKING COIL
	L404	PU48530-101K	PEAKING COIL
	L405	PU59152-100J	PEAKING COIL
	EQ201	PU58315	EQUALIZER
	EQ301	PU53501-7	EQUALIZER
	LPF101	PU58021-2	LOW PASS FILTER
	OR	PU58021-3	LOW PASS FILTER
	LPF301	PU58022	LOW PASS FILTER
	LPF302	PU54988	LOW PASS FILTER
	OR	PU54988-2	LOW PASS FILTER
	BPF301	PU54410-2	BAND PASS FILTER
	BPF302	PU57072	BAND PASS FILTER
	CF351	PU56983	CERAMIC FILTER
	DL101	PU59173	1H DELAY LINE
	DL301	PU60340	COMB FILTER
	OR	PU58971-3	2H DELAY LINE
	OR	PU60222	2H DELAY LINE
	XB301	PU58023	CRYSTAL BLOCK
⚠	X301	PU60307	CRYSTAL RESONATOR
	OR	PU59335	CRYSTAL RESONATOR
	OR	PU31449-4K	CRYSTAL RESONATOR
	TH101	ERT-D2FGL101S	THERMISTOR
	SLD1	PU59170	CCD SHIELD 1
	SLD2	PU59171	CCD SHIELD 2
	SLD3	PU59172-1-1	CCD SHIELD 3
	TP	PU57545	TEST PIN, X18
	TP 401	PU56347	TEST POINT
	TP	PU59391	STYLE PIN

-VIDEO SUB BOARD ASSEMBLY (1)-

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB40007A	VIDEO SUB BOARD ASSY (1)
	IC203	BA7021	IC
	Q221	DTA144EF	TRANSISTOR
	D221	1SS133	DIODE
	R251	QRD162J-333	RESISTOR
	R252	QRD162J-332	RESISTOR
	C261	QEK51HM-104	E CAPACITOR
	C262	QCSC1HJ-330	CAPACITOR
	TML1	PU59935-10	TERMINAL

-VIDEO SUB BOARD ASSEMBLY (3)-

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB40021A-01	VIDEO SUB BOARD ASSY (3)
	IC211	BA7001	IC
	Q231	2SC1740S(QRS)	TRANSISTOR
	R261	QRD121J-271	RESISTOR
	R262	QRD162J-223	RESISTOR
	R263	QRD162J-103	RESISTOR
	R264	QRD162J-103	RESISTOR
	R265	QRD162J-103	RESISTOR
	R266	QRD162J-103	RESISTOR
	C271	QER40JM-336	E CAPACITOR
	C272	QER41CM-476	E CAPACITOR
	C273	QCVB1CN-103	CAPACITOR
	C274	QCSB1HJ-100	CAPACITOR
	L211	PU48530-101K	PEAKING COIL
	SPC	PU57215-2	SPACER,X2
	CN102	PU58844-2	CAP HOUSING
	CN111	PU58844-7	CAP HOUSING

-MECHACON BOARD ASSEMBLY < 04 >-

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB10074B2	MECHACON BOARD ASSEMBLY
	IC601	M50965-644SP	IC
	OR	M50965E-322SP	IC
	IC602	BA6259N	IC
	IC603	M54647L	IC
	IC604	BA6222	IC
⚠	Q601	2SC1317(RS)	TRANSISTOR
	Q603	DTC114ES	TRANSISTOR
	Q604	2SB641R,S	TRANSISTOR
	Q605	DTC114ES	TRANSISTOR
	D601	1SS133	DIODE
	OR	MA165	DIODE
	D602	1SS133	DIODE
	OR	MA165	DIODE
	D603	HZS4.3EB2	ZENER DIODE
⚠	D604	HZS7.5EB2	ZENER DIODE
	D607	1SS133	DIODE
	OR	MA165	DIODE
	D608	1SS133	DIODE
	OR	MA165	DIODE
	D609	1SS133	DIODE
	OR	MA165	DIODE
	R601	QRD161J-152	RESISTOR
	R602	QRD161J-103	RESISTOR
	R603	QRD161J-103	RESISTOR
	R604	QRD161J-122	RESISTOR
	R605	QRD161J-823	RESISTOR
	R606	QRD161J-102	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R607	QRD161J-102	RESISTOR
	R608	QRD161J-102	RESISTOR
	R609	QRD161J-472	RESISTOR
	R610	QRD161J-103	RESISTOR
	R611	QRD161J-105	RESISTOR
	R614	QRD161J-472	RESISTOR
	R615	QRD161J-472	RESISTOR
	R616	QRD161J-472	RESISTOR
	R617	QRD161J-472	RESISTOR
	R618	QRD161J-472	RESISTOR
	R619	QRD161J-472	RESISTOR
	R620	QRD161J-472	RESISTOR
	R621	QRD161J-472	RESISTOR
	R622	QRD161J-472	RESISTOR
	R623	QRD161J-472	RESISTOR
	R624	QRD161J-472	RESISTOR
	R625	QRD161J-472	RESISTOR
	R626	QRD161J-472	RESISTOR
	R627	QRD161J-472	RESISTOR
	R628	QRD161J-124	RESISTOR
	R629	QRD161J-124	RESISTOR
	R630	QRD161J-333	RESISTOR
	R632	QRD161J-332	RESISTOR
	R633	QRD161J-103	RESISTOR
	R634	QRD161J-822	RESISTOR
	R635	QRD161J-331	RESISTOR
	R640	QRD161J-333	RESISTOR
	R641	QRD161J-333	RESISTOR
	R643	QRD161J-124	RESISTOR
	R645	QRD161J-103	RESISTOR
	R646	QRD161J-393	RESISTOR
	R648	QRD161J-103	RESISTOR
	R649	QRD161J-272	RESISTOR
	RA602	QRB049J-103	RESISTOR ARRAY
	RA603	QRB049J-472	RESISTOR ARRAY
	C601	QCFB1EZ-223	CAPACITOR
	C602	QCFB1EZ-223	CAPACITOR
	C603	QCC11EK-473	CAPACITOR
	C604	QETC1EM-335	E CAPACITOR
	C605	QETC1EM-475	E CAPACITOR
	C608	QETC1HM-105	E CAPACITOR
	C611	QETC1EM-106	E CAPACITOR
	C612	QETC1EM-106	E CAPACITOR
	C615	QCFB1EZ-223	CAPACITOR
	L601	PU59152-100J	PEAKING COIL
⚠	CF601	PU60030	RESONATOR
⚠		OR PU60125	RESONATOR
	ICP601	ICP-N10	CIRCUIT PROTECT
	HD1	PU57951	TUNER BOARD HINGE, X2
⚠	HS1	PU60346	HEAT SINK
	RV1	PU52105	P RIVET
	SCW1	SBSE3006Z	TAPPING SCREW,X2
	SCW2	SBSE3008Z	TAPPING SCREW
	SPC1	PQ41028-2	SPACER
	SPC2	PQM30029-100	SPACER
	WR1	PW30109-50AAZZ6	PARALLEL WIRE
	WR2	PW30109-50AAZZC	PARALLEL WIRE
	WR3	PU58865-3	FLAT WIRE
	CN601	PU58931-14	HOUSING
	CN602	PU58931-10	HOUSING
	CN603	PU58931-14	HOUSING
	CN604	PU58931-8	HOUSING
	CN605	PU58931-14	HOUSING
	CN606	PU58931-6	HOUSING
	CN607	PU58798-17	CONNECTOR
	CN608	PU58844-6	CAP HOUSING

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8. MOTHER BOARD ASSEMBLY <05>

REF NO.	PART NO.	PART NAME, DESCRIPTION
PWBA	PB10026B-02	MOTHER BOARD ASSY
R1	QRD182J-183	RESISTOR
L1	PU59152-101J	PEAKING COIL
CN1	PU58930-16	CAP HOUSING
CN2	PU58930-14	CAP HOUSING
CN3	PU58930-10	CAP HOUSING
CN4	PU58930-14	CAP HOUSING
CN5	PU58930-8	CAP HOUSING
CN6	PU58930-14	CAP HOUSING
CN7	PU58930-6	CAP HOUSING
CN8	PU58930-14	CAP HOUSING
CN9	PU58930-16	CAP HOUSING
CN10	PU58928-14	CAP HOUSING
CN11	PU58844-7	CAP HOUSING
CN12	PU58844-10	CAP HOUSING
CN13	PU58928-6	CAP HOUSING
CN14	PU58928-9	CAP HOUSING
CN15	PU58928-5	CAP HOUSING
CN16	PU58928-8	CAP HOUSING
CN17	PU58930-22	CAP HOUSING
CN18	PU58928-13	CAP HOUSING
CN19	PU58928-18	CAP HOUSING
CN20	PU58928-20	CAP HOUSING
CN22	PU58844-8	CAP HOUSING
CN24	PU58844-2R	CAP HOUSING
CN25	PU58928-3	CAP HOUSING
CN26	PU58928-8	CAP HOUSING
CN30	PU58928-4	CAP HOUSING
CN31	PU58930-8	CAP HOUSING

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9. TERMINAL BOARD ASSEMBLY <06>

REF NO.	PART NO.	PART NAME, DESCRIPTION
PWBA	PU22307BB-03	TERMINAL BOARD ASSY, EG
	PU22307BE-03	TERMINAL BOARD ASSY, E
IC1	BX6325	IC
	OR 10VT27	IC
Q1	2SC1740S(QRS)	TRANSISTOR
Q13	2SA1309Q,R,S	TRANSISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	D1	MA165	DIODE
		OR 1SS133	DIODE
	D5	MA165	DIODE
		OR 1SS133	DIODE
	D11	MA165	DIODE
		OR 1SS133	DIODE
	R2	QRD161J-102	RESISTOR
	R3	QRD161J-102	RESISTOR
	R4	QRD161J-102	RESISTOR
	R5	QRD161J-221	RESISTOR
	R6	QRD161J-750	RESISTOR
	R7	QRD161J-750	RESISTOR
	R25	QRD181J-102	RESISTOR
	R27	QRD181J-102	RESISTOR
	R30	QRD161J-123	RESISTOR
	R33	QRD161J-123	RESISTOR
	R45	QRD161J-102	RESISTOR
	R47	QRD161J-102	RESISTOR
	R51	QRD161J-393	RESISTOR
	R52	QRD161J-152	RESISTOR
	C1	QEK61CM-476	E CAPACITOR
	C2	QEK61CM-476	E CAPACITOR
	C3	QETC0JM-477	E CAPACITOR
	C4	QETC1CM-476	E CAPACITOR
	C5	QETC1CM-476	E CAPACITOR
	C6	QEK61CM-476	E CAPACITOR
	L1	PU48530-101K	PEAKING COIL
	EQ1	PU54838	EQUALIZER
	LC1	PU59885-102	N FILTER
	LC2	PU59885-102	N FILTER
	LC3	PU59885-102	N FILTER
	LC4	PU59885-102	N FILTER
	RY1	PU55260	RELAY
⚠	TML	PU59260-62	TERMINAL BOARD,EG
⚠		PU59260-55	TERMINAL BOARD,E
	CN1	PU58929-14	HOUSING
	CN3	PU58962-6	CAP HOUSING

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10. TUNER/IF BOARD ASSEMBLY <07>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB20093D	TUNER/IF BOARD ASSY,E
		PB20093J	TUNER/IF BOARD ASSEMBLY, EG
⚠	RF	PU59241M-2	RF CONV.& MIXER
⚠	TNR	PU36155-1-4	U/V TUNER,EG
⚠		PU36155-1-3	U/V TUNER, E
⚠		OR PU36155-1-4	U/V TUNER, E
	IC 1	M51365SP	IC
	IC 2	M50440-397SP	IC
	IC 3	M58655P	IC
	Q 1	2SC2636S,T	TRANSISTOR
	Q 3	2SC1740S(RS)	TRANSISTOR
		OR 2SC3311A(RS)	TRANSISTOR
	Q 4	2SC1740S(RS)	TRANSISTOR
		OR 2SC3311A(RS)	TRANSISTOR
	Q 5	2SA933S(RS)	TRANSISTOR
		OR 2SA1309R,S	TRANSISTOR
	Q 6	2SC1740S(RS)	TRANSISTOR
		OR 2SC3311A(RS)	TRANSISTOR
	Q 7	2SC1740S(RS)	TRANSISTOR
		OR 2SC3311A(RS)	TRANSISTOR
	Q 9	2SB808SPA(FG)	TRANSISTOR
	Q10	2SB808SPA(FG)	TRANSISTOR
	Q11	2SB808SPA(FG)	TRANSISTOR
	Q12	2SB808SPA(FG)	TRANSISTOR
	Q13	2SK381(C)	FE TRANSISTOR
	Q14	2SC1740S(RS)	TRANSISTOR
		OR 2SC3311A(RS)	TRANSISTOR
	Q15	2SD1468S(RSE)	TRANSISTOR
		OR 2SD1450S,T	TRANSISTOR
	Q16	2SD1863(QR)	TRANSISTOR
		OR 2SC3243D,E	TRANSISTOR
	Q17	2SB1010(QR)	TRANSISTOR
	Q18	DTA124ES	TRANSISTOR
	Q21	2SC1740S(RS)	TRANSISTOR
		OR 2SC3311A(RS)	TRANSISTOR
	Q22	2SA933S(RS)	TRANSISTOR
		OR 2SA1309R,S	TRANSISTOR
	Q23	2SC1740S(RS)	TRANSISTOR
		OR 2SC3311A(RS)	TRANSISTOR
	Q24	2SC3354	TRANSISTOR
	Q26	DTC144ES	TRANSISTOR
	D 1	1SS133	DIODE
	D 2	1SS133	DIODE
	D 3	1SS133	DIODE
	D 4	1SS133	DIODE
	D 5	1SS133	DIODE
	D 6	HZ30-2	ZENER DIODE
	D 7	MTZ10B	ZENER DIODE
		OR RD10ES-T1B2	ZENER DIODE
	D 8	1SS133	DIODE
	D 9	MTZ7.5B	ZENER DIODE
		OR RD7.5ES-T1B2	ZENER DIODE
	D10	E-452-2	DIODE
	D11	RD5.6ES-T1B3	ZENER DIODE
		OR MTZ5.6C	ZENER DIODE
	D12	1SS133	DIODE
	R 1	QRD161J-151	RESISTOR
	R 2	QRD161J-822	RESISTOR
	R 3	QRD161J-392	RESISTOR
	R 4	QRD161J-470	RESISTOR
	R 6	QRD161J-681	RESISTOR
	R 7	QRD161J-271	RESISTOR
	R 8	QRD161J-120	RESISTOR
	R10	QRD161J-824	RESISTOR
	R11	QVZ3518-472	V RESISTOR,RF AGC
	R12	QRD161J-222	RESISTOR
	R13	QRD161J-562	RESISTOR
	R14	QRD161J-332	RESISTOR
	R15	QRD161J-152	RESISTOR
	R16	QVZ3518-103	V RESISTOR, Y LEVEL
	R17	QRD161J-331	RESISTOR
	R18	QRD161J-561	RESISTOR
	R19	QRD161J-470	RESISTOR
	R20	QRD161J-561	RESISTOR
	R23	QRD161J-473	RESISTOR
	R40	QRD161J-182	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R41	QRD161J-272	RESISTOR
	R42	QVZ3518-103	V RESISTOR, COLOR LEVEL
	R43	QRD161J-123	RESISTOR
	R44	QRD161J-123	RESISTOR
	R45	QRD161J-331	RESISTOR
	R46	QRD161J-222	RESISTOR
	R49	QRD161J-331	RESISTOR
	R50	QRD161J-680	RESISTOR
	R51	QRD161J-222	RESISTOR
	R52	QRD161J-471	RESISTOR
	R53	QRD161J-103	RESISTOR
	R54	QRD161J-332	RESISTOR
	R55	QRD161J-680	RESISTOR
	R56	QRD161J-223	RESISTOR
	R57	QRD161J-471	RESISTOR
	R58	QRD161J-102	RESISTOR
	R59	QRD161J-223	RESISTOR
	R60	QRD161J-103	RESISTOR
	R61	QRD161J-334	RESISTOR
	R62	QRD161J-103	RESISTOR
	R63	QRD161J-331	RESISTOR
	R75	QRD161J-472	RESISTOR
	R76	QRD161J-103	RESISTOR
	R77	QRD161J-153	RESISTOR
	R78	QRD161J-472	RESISTOR
	R79	QRD161J-103	RESISTOR
	R80	QRD161J-153	RESISTOR
	R81	QRD161J-472	RESISTOR
	R82	QRD161J-103	RESISTOR
	R83	QRD161J-153	RESISTOR
	R84	QRD161J-472	RESISTOR
	R85	QRD161J-103	RESISTOR
	R86	QRD161J-153	RESISTOR
	R87	QRD161J-224	RESISTOR
	R88	QRD161J-153	RESISTOR
	R91	QRD161J-472	RESISTOR
	R92	QRD161J-562	RESISTOR
	R93	QRD161J-152	RESISTOR
	R94	QRD161J-472	RESISTOR
	R95	QRD161J-121	RESISTOR
	R96	QRD161J-103	RESISTOR
	R97	QRD161J-103	RESISTOR
	R98	QRD161J-153	RESISTOR
	R100	QRD161J-101	RESISTOR
	R101	QRD161J-222	RESISTOR
	R102	QRD161J-222	RESISTOR
	R103	QRD161J-222	RESISTOR
	R104	QRD161J-222	RESISTOR
	R105	QRD161J-222	RESISTOR
	R106	QRD161J-102	RESISTOR
	R107	QRD161J-222	RESISTOR
	R108	QRD161J-103	RESISTOR
	R110	QRD161J-104	RESISTOR
	R112	QRD161J-222	RESISTOR
	R122	QRD161J-103	RESISTOR
	R123	QRD161J-103	RESISTOR
	R124	QRD161J-103	RESISTOR
	R125	QRD161J-103	RESISTOR
	R126	QRD161J-103	RESISTOR
	R127	QRD161J-473	RESISTOR
	R128	QRD161J-473	RESISTOR
	R130	QRD161J-471	RESISTOR
	R131	QRD161J-102	RESISTOR
	R133	QRD161J-103	RESISTOR
	R134	QRD161J-102	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R140	QRD161J-122	RESISTOR
	R141	QRD161J-472	RESISTOR
	R142	QRD161J-331	RESISTOR
	RA 1	QRB047J-104	RESISTOR ARRAY
	C 1	QCSB1HJ-100	CAPACITOR
	C 2	QCBB1HK-102	CAPACITOR
	C 3	QCXB1CK-222	CAPACITOR
	C 4	QCBB1HK-102	CAPACITOR
	C 5	QCBB1HK-102	CAPACITOR
	C 7	PU57601-474ME	E CAPACITOR
	C 8	QET61CM-336	E CAPACITOR
	C 9	QCXB1CK-222	CAPACITOR
	C10	QCSB1HJ-470	CAPACITOR
	C11	QET61HM-474	E CAPACITOR
	C12	QCT25PH-270	CAPACITOR
	C13	QCXB1CK-222	CAPACITOR
	C14	QET61CM-336	E CAPACITOR
	C23	QET61HM-105	E CAPACITOR
	C30	QEN61CM-336	NP E CAPACITOR
	C31	QCSB1HJ-470	CAPACITOR
	C34	QET61CM-336	E CAPACITOR
	C35	QET61CM-106	E CAPACITOR
	C36	QCC11EK-223	CAPACITOR
	C37	QET61HM-474	E CAPACITOR
	C39	QCC31EK-104	CAPACITOR
	C40	QET61CM-106	E CAPACITOR
	C41	QET61CM-106	E CAPACITOR
	C42	QET61CM-106	E CAPACITOR
	C43	QET61CM-106	E CAPACITOR
	C44	QET61HM-225	E CAPACITOR
	C46	QFV81HJ-474	M CAPACITOR
	OR	QFZ9011-474	MM CAPACITOR
	C47	QFN31HJ-223	M CAPACITOR
	C48	QCBB1HK-102	CAPACITOR
	C49	QCBB1HK-102	CAPACITOR
	C51	QCT25CH-220	CAPACITOR
	C52	QCT25CH-270	CAPACITOR
	C53	QCVB1CM-103	CAPACITOR
	C54	QCVB1CM-103	CAPACITOR
	C55	QET61CM-106	E CAPACITOR
	C56	QET61CM-336	E CAPACITOR
	C57	QET61CM-107	E CAPACITOR
	C58	QCBB1HK-102	CAPACITOR
	C59	QET61AM-336	E CAPACITOR
	C60	QET61AM-107	E CAPACITOR
	C61	QET61CM-106	E CAPACITOR
	C63	QET61HM-106	E CAPACITOR
	C65	QET61CM-336	E CAPACITOR
	C66	PU57601-335MC	E CAPACITOR
	C70	QCBB1HK-102	CAPACITOR
	C71	QCBB1HK-102	CAPACITOR
	L 1	PU59152-R22K	PEAKING COIL
	L 2	PU57717-1R0J	PEAKING COIL
	L 3	PU57717-1R5J	PEAKING COIL
	L 4	PU59152-6R8K	PEAKING COIL
	L 5	PU59152-120J	PEAKING COIL
	L 6	PU59152-6R8K	PEAKING COIL
	L 8	PU59152-220J	PEAKING COIL
	L10	PU59152-100J	PEAKING COIL
	L11	PU59152-R22K	PEAKING COIL
	OR	PU53223-R22K	PEAKING COIL
	L13	PU53223-101J	PEAKING COIL

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	CF 3	PU32990-2	CERAMIC FILTER
	SAW 1	PU35557-4	SAW FILTER
	X1	PU58554-2	CRYSTAL RESONATOR, 4.0M
	T 1	PU59402	TRAP COIL, FTZ TRAP
	T 2	PU59308	COIL, VCO
	T 5	PU55184	IF.TRANSFORMER, SYNC DET
	SLD1	PU36322	SHIELD CASE
	SLD2	PQ31328-1-1	SHIELD COVER
	SLD3	PQ42506	SHIELD PLATE
	TP	PU59391	STYLE PIN, EG
	WR1	PW30401-AE11S	COAXIAL CORD, PLL
	WR2	PW30401-AE11S	COAXIAL CORD, PSC
	WR3	PW30401-AB11S	COAXIAL CORD, RF CONV
		OR PW30401-AB11T	COAXIAL CORD
	WR4	PW30401-AC36S	COAXIAL CORD
		OR PW30401-AC36T	COAXIAL CORD
	CN3	PU58844-3	CAP HOUSING, E
	CN4	PU58928-3	CAP HOUSING,EG
	CN6	PU59374	JACK

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11. SERVO BOARD ASSEMBLY <08>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB20104A-02	SERVO BOARD ASSEMBLY
	IC1	HD49712ANT	IC
	IC61	BU2767S	IC
	Q1	2SC3311A	TRANSISTOR
	Q2	DTA124ES	TRANSISTOR
		OR UN4112	TRANSISTOR
	Q3	DTA124ES	TRANSISTOR
		OR UN4112	TRANSISTOR
	Q4	DTA124ES	TRANSISTOR
		OR UN4112	TRANSISTOR
	Q5	DTA124ES	TRANSISTOR
		OR UN4112	TRANSISTOR
	Q6	DTC124XS	TRANSISTOR
	Q7	DTA144ES	TRANSISTOR
	Q61	DTA124ES	TRANSISTOR
		OR UN4112	TRANSISTOR
	Q63	2SD1468S(SE)	TRANSISTOR
	Q64	2SD1468S(SE)	TRANSISTOR
	Q65	DTC144ES	TRANSISTOR
		OR UN4213	TRANSISTOR
	Q66	DTC144ES	TRANSISTOR
		OR UN4213	TRANSISTOR
	D1	1SS133	DIODE
		OR MA165	DIODE
	D2	1SS133	DIODE
		OR MA165	DIODE
	D3	1SS133	DIODE
		OR MA165	DIODE
	D4	1SS133	DIODE
		OR MA165	DIODE
	D5	1SS133	DIODE
		OR MA165	DIODE
	D6	1SS133	DIODE
		OR MA165	DIODE
	D7	1SS133	DIODE
		OR MA165	DIODE
	D8	1SS133	DIODE
		OR MA165	DIODE
	D9	1SS133	DIODE
		OR MA165	DIODE
	D10	1SS133	DIODE
		OR MA165	DIODE
	D11	1SS133	DIODE
		OR MA165	DIODE
	D12	1SS133	DIODE
		OR MA165	DIODE
	D13	1SS133	DIODE
		OR MA165	DIODE
	D15	1SS133	DIODE
		OR MA165	DIODE
	D61	11E2	DIODE
	D65	1SS133	DIODE
		OR MA165	DIODE
	D68	1SS133	DIODE
		OR MA165	DIODE
	D70	1SS133	DIODE
		OR MA165	DIODE
	R1	QRD161J-102	RESISTOR
	R2	QRD161J-222	RESISTOR
	R3	QRD161J-221	RESISTOR
	R4	QRD161J-563	RESISTOR
	R5	QRD161J-153	RESISTOR
	R6	QRD161J-682	RESISTOR
	R7	QRD161J-331	RESISTOR
	R8	QRD161J-105	RESISTOR
	R9	QRD161J-103	RESISTOR
	R10	QRD161J-152	RESISTOR
	R11	QRD161J-684	RESISTOR
	R12	QRD161J-333	RESISTOR
	R13	QRD161J-223	RESISTOR
	R14	QRD161J-332	RESISTOR
	R15	QRD161J-102	RESISTOR
	R16	QRD161J-102	RESISTOR
	R17	QRD161J-102	RESISTOR
	R18	QVZ3521-474	V RESISTOR, SP X2 TK PRESET
	R19	QRD161J-393	RESISTOR
	R20	QVZ3521-474	V RESISTOR, LP X2 TK PRESET
	R21	QRD161J-334	RESISTOR
	R22	QRD161J-223	RESISTOR
	R24	QVZ3521-684	V RESISTOR, PB SW POINT
	R25	QRD161J-104	RESISTOR
	R26	QRD161J-102	RESISTOR
	R27	QRD161J-273	RESISTOR
	R28	QRD161J-105	RESISTOR
	R29	QRD161J-104	RESISTOR
	R30	QRD161J-105	RESISTOR
	R31	QRD161J-105	RESISTOR
	R32	QRD161J-273	RESISTOR
	R33	QRD161J-334	RESISTOR
	R34	QRD161J-103	RESISTOR
	R35	QRD161J-102	RESISTOR
	R36	QRD161J-103	RESISTOR
	R37	QRD161J-105	RESISTOR
	R38	QRD161J-273	RESISTOR
	R39	QRD161J-182	RESISTOR
	R40	QRD161J-472	RESISTOR
	R41	QRD161J-103	RESISTOR
	R42	QRD161J-475	RESISTOR
	R43	QRD161J-473	RESISTOR
	R44	QRD161J-222	RESISTOR
	R45	QRD161J-273	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R46	QRD161J-103	RESISTOR
	R47	QRD161J-222	RESISTOR
	R49	QRD161J-223	RESISTOR
	R50	QRD161J-103	RESISTOR
	R61	QRD161J-103	RESISTOR
	R67	QRD161J-684	RESISTOR
	R68	QRD161J-104	RESISTOR
	R69	QVZ3521-105	V RESISTOR, LP PRESET (SLOW)
	R70	QRD161J-274	RESISTOR
	R71	QRD161J-154	RESISTOR
	R72	QVZ3521-105	V RESISTOR, SP PRESET (SLOW)
	R73	QRD161J-684	RESISTOR
	R74	QRD161J-334	RESISTOR
	R75	QRD161J-103	RESISTOR
	R85	QRD161J-123	RESISTOR
	R86	QRD161J-822	RESISTOR
	R87	QRD161J-222	RESISTOR
	R88	QRD161J-473	RESISTOR
⚠	R89	QRG019J-331S	OMF.RESISTOR
	R90	QRD161J-562	RESISTOR
	R91	QRD161J-473	RESISTOR
	R92	QRD161J-105	RESISTOR
	R93	QRD161J-103	RESISTOR
	C1	QETC1CM-106	E CAPACITOR
	C2	QCBB1HJ-102	CAPACITOR
	C3	QETC1HM-474	E CAPACITOR
	C4	QCBB1HJ-102	CAPACITOR
	C5	QCBB1HJ-102	CAPACITOR
	C6	QETC1AM-226	E CAPACITOR
	C7	QETC1AM-226	E CAPACITOR
	C8	QCSB1HJ-150	CAPACITOR
	C9	QETC1HM-105	E CAPACITOR
	C10	QCXB1CN-472	CAPACITOR
	C11	QCXB1CN-222	CAPACITOR
	C12	QCBB1HJ-102	CAPACITOR
	C13	QETC1HM-224	E CAPACITOR
	C14	QCBB1HJ-102	CAPACITOR
	C15	QETC1HM-105	E CAPACITOR
	C16	QETC1AM-226	E CAPACITOR
	C19	QFV71HJ-124	M CAPACITOR
	C21	QFL31HJ-682	M CAPACITOR
	C22	QCBB1HJ-471	CAPACITOR
	C23	QFV71HJ-104	M CAPACITOR
	C24	QEN61HM-105	NP E CAPACITOR
	C25	QETC1CM-106	E CAPACITOR
	C26	QETC1CM-106	E CAPACITOR
	C27	QETC1EM-475	E CAPACITOR
	C28	QETC1EM-475	E CAPACITOR
	C29	QCC31CK-122	CAPACITOR
	OR	QFN31HJ-122	M CAPACITOR
	C30	QFV71HJ-334	M CAPACITOR
	C31	QCBB1HJ-102	CAPACITOR
	C32	QCVB1CN-103	CAPACITOR
	C33	QCBB1HJ-101	CAPACITOR
	C36	QEN50JM-336	NP E CAPACITOR
	C37	QCBB1HJ-471	CAPACITOR
	C38	QCBB1HJ-471	CAPACITOR
	C61	QET61AM-226	E CAPACITOR
	C62	QFN31HJ-393	M CAPACITOR
	C63	QFN31HJ-393	M CAPACITOR
	C64	QFN31HJ-104	M CAPACITOR
	C65	QFN31HJ-124	M CAPACITOR
	C66	QFN31HJ-393	M CAPACITOR
	C67	QCBB1HJ-681	CAPACITOR
	C68	QCBB1HJ-471	CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C71	QCC31CK-102	CAPACITOR
⚠	CF61	PU60215	RESONATOR
	TP GND	PU55774	TEST PIN
	TP 1	PU55774	TEST PIN
	TP 11	PU55774	TEST PIN
	TP 4	PU55774	TEST PIN
	TP	PU59391	STYLE PIN
	CN1	PU58844-2	CAP HOUSING
	CN2	PU58844-2	CAP HOUSING
	CN3	PU58844-5	CAP HOUSING
	CN4	PU58931-14	HOUSING
	CN5	PU58931-16	HOUSING
	CN6	PU58844-6	CAP HOUSING

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12. AUDIO BOARD ASSEMBLY <09>

REF NO.	PART NO.	PART NAME, DESCRIPTION
PWBA	PU36223B-04	AUDIO BOARD ASSEMBLY
IC1	AN3994NK	IC
Q1	2SC1740S(RS)	TRANSISTOR
Q2	2SC1740S(RS)	TRANSISTOR
Q3	2SC1740S(RS)	TRANSISTOR
Q4	2SA1309R,S	TRANSISTOR
Q6	DTC124ES	TRANSISTOR
Q7	2SA1309R,S	TRANSISTOR
Q8	2SA1309R,S	TRANSISTOR
Q9	DTC144ES	TRANSISTOR
D1	MA165	DIODE
OR	1SS133	DIODE
D2	MA165	DIODE
OR	1SS133	DIODE
D3	MA165	DIODE
OR	1SS133	DIODE
D4	MA165	DIODE
OR	1SS133	DIODE
D5	MA165	DIODE
OR	1SS133	DIODE
D6	MA165	DIODE
OR	1SS133	DIODE
D7	MA165	DIODE
OR	1SS133	DIODE
D10	1SS133	DIODE
OR	MA165	DIODE
D12	1SS133	DIODE
OR	MA165	DIODE
R1	QRD161J-103	RESISTOR
R2	QRD161J-124	RESISTOR
R3	QRD161J-223	RESISTOR
R4	QRD161J-331	RESISTOR
R5	QVZ3518-102	V RESISTOR, PB LEVEL
R6	QRD161J-100	RESISTOR
R7	QRD161J-471	RESISTOR
R8	QRD161J-303	RESISTOR
R9	QRD161J-470	RESISTOR
R10	QRD161J-473	RESISTOR
R11	QRD161J-563	RESISTOR
R12	QRD161J-271	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R13	QRD161J-153	RESISTOR
	R14	QRD161J-153	RESISTOR
	R15	QRD161J-103	RESISTOR
	R16	QRD161J-103	RESISTOR
	R17	QRD161J-103	RESISTOR
	R18	QRD161J-331	RESISTOR
	R19	QRD161J-103	RESISTOR
	R20	QVZ3518-473	V RESISTOR, BIAS LEVEL
	R21	QRD161J-8R2	RESISTOR
	R22	QRD161J-104	RESISTOR
	R23	QRD161J-100	RESISTOR
	R24	QRD161J-223	RESISTOR
⚠	R31	PU52108-4R7	POSISTOR
	R32	QRD161J-100	RESISTOR
	R33	QRD161J-473	RESISTOR
	R36	QRD161J-223	RESISTOR
	R37	QRD161J-563	RESISTOR
	C1	QEK61EM-475G	E CAPACITOR
	OR	QEK61EM-475	E CAPACITOR
	C2	QER61HM-474G	E CAPACITOR
	C3	QFV71HJ-224	M CAPACITOR
	C4	QFN31HJ-123	M CAPACITOR
	C5	QEL61EM-475	E CAPACITOR
	C6	QCBB1HJ-102	CAPACITOR
	C7	QFN31HJ-152	M CAPACITOR
	C8	QER61CM-226	E CAPACITOR
	C9	QER61CM-106	E CAPACITOR
	C10	QER61CM-476	E CAPACITOR
	C11	QER61CM-106G	E CAPACITOR
	C12	QCBB1HJ-331	CAPACITOR
	C13	QFN31HJ-683	M CAPACITOR
	C14	QFN31HJ-683	M CAPACITOR
	C15	QER61HM-225G	E CAPACITOR
	C16	QCBB1HJ-102	CAPACITOR
	C17	QER60JM-476	E CAPACITOR
	C18	QER61AM-476	E CAPACITOR
	C19	QCBB1HJ-331	CAPACITOR
	C20	QFN31HJ-333	M CAPACITOR
	C21	QER61CM-476	E CAPACITOR
	C22	QCBB1HJ-102	CAPACITOR
	C23	QCBB1HJ-102	CAPACITOR
	C26	QER61CM-106	E CAPACITOR
	C27	QCVB1CN-103	CAPACITOR
	C40	QEN61CM-106	NP E CAPACITOR
	C41	QFN31HJ-563	M CAPACITOR
	C42	QCBB1HJ-102	CAPACITOR
	C43	QCBB1HJ-102	CAPACITOR
	L1	PU58308-272J	COIL
	T1	PU59520	OSC TRANS
	T2	PU59521	OSC TRANS
	TP31	PU55774	TEST PIN
	TP32	PU55774	TEST PIN
	CN1	PU58844-7	CAP HOUSING
	CN2	PU58844-4	CAP HOUSING
	CN3	PU58844-8	CAP HOUSING

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13. AUDIO/CTL HEAD BOARD <12>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWB1	PU58016	A/CTL HEAD BOARD
	BKT1	PQ43014	BRACKET
	SCW1	SPSH1740	MINI SCREW
	CN1	PU54537-5	CAP HOUSING
	CN2	PU54537-2B	CAP HOUSING

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14. FMA BOARD ASSEMBLY <13>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PU22346W	FMA BOARD ASSEMBLY
	IC1	AN6299NK	IC
	IC2	AN3926K	IC
	IC3	BA3707	IC
	IC4	M5218P	IC
	IC201	HA11752	IC
	IC202	PU22280B-02	FMA MODULE
⚠	IC203	M5278L10	IC
⚠	Q5	2SC1740S(QR)	TRANSISTOR
	Q6	DTA143ES	TRANSISTOR
	Q7	DTC124ES	TRANSISTOR
	Q201	2SC1740S(QRS)	TRANSISTOR
	Q202	2SC1740S(QRS)	TRANSISTOR
	Q203	2SC1740S(QRS)	TRANSISTOR
	Q204	2SB643Q	TRANSISTOR
	Q205	2SD638Q	TRANSISTOR
	Q206	2SB641Q	TRANSISTOR
	Q207	2SC1740S(QRS)	TRANSISTOR
	Q208	2SC1740S(QRS)	TRANSISTOR
	Q209	2SC1740S(QRS)	TRANSISTOR
	Q212	DTA143ES	TRANSISTOR
⚠	Q213	UN4119	TRANSISTOR
	Q214	DTC144ES	TRANSISTOR
	Q215	DTC144ES	TRANSISTOR
⚠	Q216	UN4119	TRANSISTOR
	D201	1SS133	DIODE
	D203	DA210S	DIODE
	D204	DAN209S	DIODE
	D206	1SS133	DIODE
	R1	QRSA08J-473YN	RESISTOR
	R2	QRSA08J-473YN	RESISTOR
	R3	QRSA08J-273YN	RESISTOR
	R4	QRSA08J-273YN	RESISTOR
	R5	QVZ3244-472	V RESISTOR, E-E LEVEL-1 (L)
	R6	QVZ3244-472	V RESISTOR, E-E LEVEL-1 (R)
	R7	QRSA08J-682YN	RESISTOR
	R8	QRSA08J-682YN	RESISTOR
	R9	QRSA08J-821YN	RESISTOR
	R10	QRSA08J-821YN	RESISTOR
	R11	QRSA08J-392YN	RESISTOR
	R12	QRSA08J-392YN	RESISTOR
	R13	QRSA08J-123YN	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R14	QRSA08J-123YN	RESISTOR
	R15	QRSA08J-123YN	RESISTOR
	R16	QRSA08J-123YN	RESISTOR
	R17	QRSA08J-153YN	RESISTOR
	R18	QRSA08J-153YN	RESISTOR
	R19	QRSA08J-513YN	RESISTOR
	R20	QRSA08J-513YN	RESISTOR
	R21	QRSA08J-102YN	RESISTOR
	R22	QRSA08J-102YN	RESISTOR
	R23	QRSA08J-102YN	RESISTOR
	R24	QRSA08J-102YN	RESISTOR
	R25	QRSA08J-151YN	RESISTOR
	R26	QRSA08J-151YN	RESISTOR
	R27	QRSA08J-225YN	RESISTOR
	R28	QRSA08J-225YN	RESISTOR
	R29	QVZ3244-472	V RESISTOR, IND LEVEL (L)
	R30	QVZ3244-472	V RESISTOR, IND LEVEL (R)
	R31	QRSA08J-222YN	RESISTOR
	R32	QRSA08J-222YN	RESISTOR
	R33	QVZ3244-472	V RESISTOR, E-E LEVEL-2 (L)
	R34	QVZ3244-472	V RESISTOR, E-E LEVEL-2 (R)
	R35	QRSA08J-682YN	RESISTOR
	R36	QRSA08J-682YN	RESISTOR
	R37	QRSA08J-124YN	RESISTOR
	R38	QRSA08J-334YN	RESISTOR
	R39	QRSA08J-222YN	RESISTOR
	R40	QRSA08J-333YN	RESISTOR
	R41	QRSA08J-102YN	RESISTOR
	R42	QRSA08J-102YN	RESISTOR
	R43	QRSA08J-122YN	RESISTOR
	R44	QRSA08J-472YN	RESISTOR
	R45	QRSA08J-272YN	RESISTOR
	R46	QRSA08J-122YN	RESISTOR
	R47	QRSA08J-103YN	RESISTOR
	R48	QRSA08J-104YN	RESISTOR
	R49	QRSA08J-224YN	RESISTOR
	R50	QRSA08J-822YN	RESISTOR
	R51	QRSA08J-102YN	RESISTOR
	R52	QRSA08J-104YN	RESISTOR
	R53	QRSA08J-154YN	RESISTOR
	R54	QRSA08J-333YN	RESISTOR
	R55	QRSA08J-392YN	RESISTOR
	R56	QRSA08J-223YN	RESISTOR
	R57	QRSA08J-223YN	RESISTOR
	R58	QRSA08J-392YN	RESISTOR
	R59	QRSA08J-392YN	RESISTOR
	R65	QRSA08J-102YN	RESISTOR
	R66	QRSA08J-561YN	RESISTOR
	R68	QRSA08J-122YN	RESISTOR
	R69	QRSA08J-103YN	RESISTOR
	R72	QRSA08J-333YN	RESISTOR
	R74	QRSA08J-561YN	RESISTOR
	R75	QRSA08J-472YN	RESISTOR
	R76	QRSA08J-472YN	RESISTOR
	R78	QRSA08J-103YN	RESISTOR
	R201	QRSA08J-681YN	RESISTOR
	R202	QRSA08J-102YN	RESISTOR
	R203	QRSA08J-100YN	RESISTOR
	R204	QRSA08J-100YN	RESISTOR
	R205	QRSA08J-392YN	RESISTOR
	R206	QRSA08J-392YN	RESISTOR
	R207	QRSA08J-152YN	RESISTOR
	R208	QRSA08J-152YN	RESISTOR
	R209	QRSA08J-472YN	RESISTOR
	R210	QRSA08J-562YN	RESISTOR
	R211	QRSA08J-562YN	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R212	QRSA08J-152YN	RESISTOR
	R213	QRSA08J-100YN	RESISTOR
	R214	QRSA08J-100YN	RESISTOR
	R215	QRSA08J-102YN	RESISTOR
	R216	QRSA08J-104YN	RESISTOR
	R217	QRSA08J-104YN	RESISTOR
	R218	QVZ3244-223	V RESISTOR, REC FM LEVEL
	R219	QRSA08J-221YN	RESISTOR
	R220	QRSA08J-221YN	RESISTOR
	R221	QRSA08J-223YN	RESISTOR
	R222	QRSA08J-223YN	RESISTOR
	R223	QRSA08J-102YN	RESISTOR
	R226	QRSA08J-224YN	RESISTOR
	R227	QRSA08J-392YN	RESISTOR
	R228	QRSA08J-221YN	RESISTOR
	R229	QRSA08J-821YN	RESISTOR
	R230	QRSA08J-223YN	RESISTOR
	R231	QRSA08J-103YN	RESISTOR
	R232	QRSA08J-273YN	RESISTOR
	R233	QRSA08J-273YN	RESISTOR
	R234	QRSA08J-123YN	RESISTOR
	R235	QRSA08J-333YN	RESISTOR
	R236	QRD161J-0R0	RESISTOR
	R237	QRD161J-0R0	RESISTOR
	R240	QRSA08J-561YN	RESISTOR
	R241	QRSA08J-472YN	RESISTOR
	R242	QRSA08J-472YN	RESISTOR
	R243	QRSA08J-561YN	RESISTOR
	R244	QRSA08J-561YN	RESISTOR
	R245	QRSA08J-302YN	RESISTOR
	R246	QRSA08J-102YN	RESISTOR
	R247	QRSA08J-102YN	RESISTOR
	R248	QRSA08J-102YN	RESISTOR
	R249	QRSA08J-102YN	RESISTOR
	R250	QVZ3244-223	V RESISTOR, PB LEVEL (R)
	R251	QRSA08J-182YN	RESISTOR
	R252	QRSA08J-332YN	RESISTOR
	R253	QRSA08J-202YN	RESISTOR
	R254	QRSA08J-334YN	RESISTOR
	R255	QRSA08J-122YN	RESISTOR
	R256	QRSA08J-182YN	RESISTOR
	R257	QRSA08J-332YN	RESISTOR
	R258	QRSA08J-202YN	RESISTOR
	R259	QVZ3244-223	V RESISTOR, PB LEVEL (L)
	R260	QRSA08J-102YN	RESISTOR
	R267	QRSA08J-122YN	RESISTOR
	R268	QRSA08J-683YN	RESISTOR
	R269	QRSA08J-103YN	RESISTOR
	R270	QRSA08J-102YN	RESISTOR
	R271	QRSA08J-183YN	RESISTOR
	C1	QER41HM-225	E CAPACITOR
	C2	QER41HM-225	E CAPACITOR
	C3	QER41HM-225	E CAPACITOR
	C4	QER41HM-225	E CAPACITOR
	C5	QER41HM-225	E CAPACITOR
	C6	QER41HM-225	E CAPACITOR
	C7	QER41CM-106	E CAPACITOR
	C8	QER41CM-106	E CAPACITOR
	C9	QER41CM-106	E CAPACITOR
	C10	QER41CM-106	E CAPACITOR
	C11	QER41CM-226	E CAPACITOR
	C12	QER41CM-226	E CAPACITOR
	C13	QER41CM-106	E CAPACITOR
	C14	QER41CM-106	E CAPACITOR
	C15	QCSA1HJ-151	CAPACITOR
	C16	QCSA1HJ-151	CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C17	QER41AM-336	E CAPACITOR
	C18	QER61AM-336	E CAPACITOR
	C19	QER41AM-336	E CAPACITOR
	C20	QER41AM-336	E CAPACITOR
	C21	QFN31HJ-333	M CAPACITOR
	C22	QFN31HJ-333	M CAPACITOR
	C23	QER41HM-225	E CAPACITOR
	C24	QER41HM-225	E CAPACITOR
	C25	QFN31HJ-153	M CAPACITOR
	C26	QFN31HJ-153	M CAPACITOR
	C27	QER41AM-336	E CAPACITOR
	C28	QER41AM-336	E CAPACITOR
	C29	QER41AM-336	E CAPACITOR
	C30	QER41AM-336	E CAPACITOR
	C31	QFN31HJ-332	M CAPACITOR
	C32	QFN31HJ-332	M CAPACITOR
	C33	QER41AM-336	E CAPACITOR
	C34	QER41AM-336	E CAPACITOR
	C35	QER41CM-106	E CAPACITOR
	C36	QER41CM-106	E CAPACITOR
	C37	QER41CM-106	E CAPACITOR
	C38	QER41CM-106	E CAPACITOR
	C39	QER41CM-106	E CAPACITOR
	C40	QER41CM-106	E CAPACITOR
	C41	QER41HM-105	E CAPACITOR
	C42	QER41HM-105	E CAPACITOR
	C43	QER40JM-107	E CAPACITOR
	C44	QER41CM-476	E CAPACITOR
	C45	QER41HM-335	E CAPACITOR
	C46	QER41HM-335	E CAPACITOR
	C47	QER41CM-106	E CAPACITOR
	C48	QFN31HJ-103	M CAPACITOR
	C49	QER41CM-106	E CAPACITOR
	C50	QER41CM-476	E CAPACITOR
	C51	QER41CM-106	E CAPACITOR
	C52	QER41CM-476	E CAPACITOR
	C53	QER41CM-476	E CAPACITOR
	C54	QER41HM-474	E CAPACITOR
	C55	QER41HM-474	E CAPACITOR
	C56	QER41CM-106	E CAPACITOR
	C57	QER41HM-474	E CAPACITOR
	C58	QER41CM-226	E CAPACITOR
	C59	QER41HM-225	E CAPACITOR
	C60	QER41HM-105	E CAPACITOR
	C61	QER41HM-105	E CAPACITOR
	C62	QER41HM-105	E CAPACITOR
	C64	QCYA1HK-221	CAPACITOR
	C66	QER41HM-105	E CAPACITOR
	C68	QFJ41HJ-563	E CAPACITOR
	C69	QER41HM-105	E CAPACITOR
	C70	QER41CM-476	E CAPACITOR
	C71	QER40JM-476	E CAPACITOR
	C201	QCF31HP-103	CAPACITOR
	C202	QER41CM-476	E CAPACITOR
	C203	QCYA1HK-103	CAPACITOR
	C205	QCYA1HK-102	CAPACITOR
	C206	QCYA1HK-103	CAPACITOR
	C207	QCF31HP-103	CAPACITOR
	C208	QCF31HP-103	CAPACITOR
	C209	QCF31HP-103	CAPACITOR
	C210	QCF31HP-103	CAPACITOR
	C211	QCYA1HK-102	CAPACITOR
	C212	QER40JM-476	E CAPACITOR
	C213	QCF31HP-103	CAPACITOR
	C216	QCF31HP-103	CAPACITOR
	C217	QCF31HP-103	CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C218	QCS31HJ-221	CAPACITOR
	C219	QCYA1HK-102	CAPACITOR
	C220	QCYA1HK-102	CAPACITOR
	C221	QCS31HJ-221	CAPACITOR
	C222	QCSA1HJ-331	CAPACITOR
	C223	QCYA1HK-102	CAPACITOR
	C224	QCF31HP-103	CAPACITOR
	C226	QER41HM-224	E CAPACITOR
	C227	QCYA1HK-103	CAPACITOR
	C228	QER40JM-476	E CAPACITOR
	C229	QCF31HP-103	CAPACITOR
	C230	QER40JM-476	E CAPACITOR
	C232	QCF31HP-103	CAPACITOR
	C235	QCF31HP-103	CAPACITOR
	C237	QCYA1HK-102	CAPACITOR
	C238	QCYA1HK-103	CAPACITOR
	C241	QFN31HJ-182	M CAPACITOR
	C242	QER41CM-106	E CAPACITOR
	C243	QFN31HJ-122	M CAPACITOR
	C244	QFN31HJ-103	M CAPACITOR
	C245	QER41AM-336	E CAPACITOR
	C246	QER41CM-106	E CAPACITOR
	C247	QER41CM-106	E CAPACITOR
	C248	QER40JM-107	E CAPACITOR
	C249	QER41AM-336	E CAPACITOR
	C250	QCF11HP-102	CAPACITOR
	C251	QER41CM-106	E CAPACITOR
	C252	QFN31HJ-182	M CAPACITOR
	C253	QER41AM-336	E CAPACITOR
	C254	QER41CM-106	E CAPACITOR
	C255	QER41CM-476	E CAPACITOR
	C256	QER41CM-106	E CAPACITOR
	C264	QER41HM-105	E CAPACITOR
	C265	QER41CM-476	E CAPACITOR
	C267	QER41AM-336	E CAPACITOR
	C269	QFN31HJ-122	M CAPACITOR
	C270	QFN31HJ-103	M CAPACITOR
	C271	QER41HM-104	E CAPACITOR
	C272	QCSA1HJ-470	CAPACITOR
	C273	QCSA1HJ-470	CAPACITOR
	C274	QEK41EM-475	E CAPACITOR
	L1	PU58308-152J	COIL
	L2	PU58308-152J	COIL
	L201	PU53223-101J	PEAKING COIL
	L202	PU53223-221J	PEAKING COIL
	L203	PU53223-101J	PEAKING COIL
	L204	PU53223-101J	PEAKING COIL
	L205	PU48530-101K	PEAKING COIL
	L206	PU58308-222J	COIL
	L207	PU53223-101J	PEAKING COIL
	L209	PU58308-222J	COIL
	BPF1	PU58494	BAND PASS FILTER
	BPF2	PU58494-2	BAND PASS FILTER
	SLD1	PQ42581	PRE AMP SHIELD1,MIDDLE
	SLD2	PQ42582	PRE AMP SHIELD2,CAP
	SLD3	PQ42583	PRE AMP SHIELD3,BOTTOM
	TP201	PU51721	TEST PIN, REC FM
	TP203	PU51721	TEST PIN, PB FM
	TP204	PU51721	TEST PIN, PB FM
	TP205	PU51721	TEST PIN, CH1 FM
	TP206	PU51721	TEST PIN, CH2 FM
	CN1	PU58844-4	CAP HOUSING, TO DRUM

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	CN2	PU58844-104	CAP HOUSING, AUX IN
	CN3	PU58844-107	CAP HOUSING, REC VR
	CN4	PU58844-102	CAP HOUSING, TO NORM
	CN5	PU58844-104	CAP HOUSING, HEADPHONE
	CN6	PU58844-103	CAP HOUSING, MIC(2-4)
	CN11	PU58929-6	HOUSING, FROM TUNER
	CN12	PU58929-8	CAP HOUSING, MECHACON
	CN14	PU58929-5	HOUSING, INDICATE
	CN15	PU58929-9	HOUSING, I/O CTL

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* 15. DEMODULATOR BOARD ASSEMBLY <14> *

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#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PU22376D	DEMODULATOR BOARD ASSEMBLY
	IC1	M51365SP	IC
	IC2	TDA3800GS	IC
	Q 1	2SD1450S,T	TRANSISTOR
		OR 2SD1292(QR)	TRANSISTOR
	Q 2	DTC114ES	TRANSISTOR
		OR UN4211	TRANSISTOR
		OR 2SC3402	TRANSISTOR
	Q 3	2SC3354	TRANSISTOR
		OR 2SC2926S(PQ)	TRANSISTOR
	Q 4	2SC3354	TRANSISTOR
		OR 2SC2926S(PQ)	TRANSISTOR
	Q11	DTC114ES	TRANSISTOR
		OR 2SC3402	TRANSISTOR
		OR UN4211	TRANSISTOR
	Q12	DTC114ES	TRANSISTOR
		OR 2SC3402	TRANSISTOR
		OR UN4211	TRANSISTOR
	Q13	DTC114ES	TRANSISTOR
		OR 2SC3402	TRANSISTOR
		OR UN4211	TRANSISTOR
	Q14	DTC114ES	TRANSISTOR
		OR 2SC3402	TRANSISTOR
	Q15	2SD1450S,T	TRANSISTOR
		OR 2SD1468S(RSE)	TRANSISTOR
	Q16	2SD1450S,T	TRANSISTOR
		OR 2SD1468S(RSE)	TRANSISTOR
	Q17	2SC3311A(S)	TRANSISTOR
		OR 2SC1740S(S)	TRANSISTOR
	Q18	2SC3311A(S)	TRANSISTOR
		OR 2SC1740S(S)	TRANSISTOR
	Q19	DTC144ES	TRANSISTOR
		OR UN4213	TRANSISTOR
		OR 2SC3399	TRANSISTOR
	Q20	DTC114ES	TRANSISTOR
	D 2	1SS133	DIODE
	D 5	1SS133	DIODE
	D 6	1SS133	DIODE
	D 7	1SS133	DIODE
	D 8	1SS133	DIODE
	D 9	1SS133	DIODE
	R 1	QRD161J-561	RESISTOR
	R 9	QRD161J-331	RESISTOR
	R11	QRD161J-561	RESISTOR
	R12	QRD161J-101	RESISTOR
	R13	QRD161J-330	RESISTOR
	R14	QRD161J-101	RESISTOR
	R15	QRD161J-471	RESISTOR
	R16	QRD161J-821	RESISTOR
	R18	QRD161J-824	RESISTOR
	R21	QRD161J-822	RESISTOR
	R22	QRD161J-222	RESISTOR
	R23	QRD161J-272	RESISTOR
	R24	QRD161J-223	RESISTOR
	R26	QRD161J-470	RESISTOR
	R27	QRD161J-561	RESISTOR
	R31	QVZ3518-103	V RESISTOR, SEPARATION
	R32	QRD161J-331	RESISTOR
	R33	QRD161J-331	RESISTOR
	R36	QRD161J-471	RESISTOR
	R42	QRD161J-103	RESISTOR
	R43	QRD161J-103	RESISTOR
	R44	QRD161J-123	RESISTOR
	R45	QRD161J-821	RESISTOR
	R46	QRD161J-102	RESISTOR
	R48	QRD161J-273	RESISTOR
	R51	QRD161J-103	RESISTOR
	R52	QRD161J-103	RESISTOR
	R53	QRD161J-681	RESISTOR
	R54	QRD161J-103	RESISTOR
	R55	QRD161J-103	RESISTOR
	R56	QRD161J-681	RESISTOR
	R57	QVZ3518-332	V RESISTOR, L LEVEL
	R58	QRD161J-222	RESISTOR
	R59	QRD161J-103	RESISTOR
	R62	QVZ3518-332	V RESISTOR, R LEVEL
	R63	QRD161J-222	RESISTOR
	R64	QRD161J-103	RESISTOR
	R66	QRD161J-821	RESISTOR
	R67	QRD161J-821	RESISTOR
	R71	QRD161J-104	RESISTOR
	R72	QRD161J-154	RESISTOR
	R73	QRD161J-104	RESISTOR
	R74	QRD161J-154	RESISTOR
	R75	QRD161J-272	RESISTOR
	R76	QRD161J-224	RESISTOR
	R77	QRD161J-103	RESISTOR
	R78	QRD161J-820	RESISTOR
	R79	QRD161J-473	RESISTOR
	R84	QRD161J-103	RESISTOR
	R86	QRD161J-101	RESISTOR
	C 1	QCBB1HK-102	CAPACITOR
	C 2	QETC1CM-476	E CAPACITOR
	C12	QCXB1CM-222	CAPACITOR
	C13	QCBB1HK-102	CAPACITOR
	C14	QCXB1CM-222	CAPACITOR
	C15	QCC11EK-473	CAPACITOR
	C16	QETC1CM-336	E CAPACITOR
	C17	QCXB1CM-222	CAPACITOR
	C19	QETC1HM-474	E CAPACITOR
	C21	QCXB1CM-222	CAPACITOR
	C22	QETC1CM-336	E CAPACITOR
	C23	QCVB1CM-103	CAPACITOR
	C24	QCBB1HJ-101	CAPACITOR
	C26	QETC1CM-106	E CAPACITOR
	C27	QETC1HM-105	E CAPACITOR
	C28	QCXB1CM-222	CAPACITOR
	C29	QETC1CM-476	E CAPACITOR
	C30	QETC1CM-106	E CAPACITOR
	C31	QCT25PH-270	CAPACITOR
	C32	QETC1HM-474	E CAPACITOR
	C37	QFN31HK-392	M CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C38	QFN31HK-392	M CAPACITOR
	C39	QFN31HK-392	M CAPACITOR
	C41	QETC1CM-106	E CAPACITOR
	C42	QETC1CM-106	E CAPACITOR
	C43	QETC1CM-476	E CAPACITOR
	C44	QCF31HP-223	CAPACITOR
	C45	QCC11EK-473	CAPACITOR
	C46	QFP31HJ-102	M CAPACITOR
	C47	QETA1CM-477	E CAPACITOR
	C49	QEU51CM-108	E CAPACITOR
	C50	QCXB1CM-222	CAPACITOR
	C51	QCC11EK-473	CAPACITOR
	C52	QETC1CM-106	E CAPACITOR
	C53	QETC1CM-106	E CAPACITOR
	C54	QETC1HM-105	E CAPACITOR
	C63	QETC1CM-336	E CAPACITOR
	C64	QETC1CM-476	E CAPACITOR
	C65	QFN31HJ-123	M CAPACITOR
	C66	QFN31HJ-123	M CAPACITOR
	L 1	PU57717-1R0	PEAKING COIL
	L 2	PU57717-1R5	PEAKING COIL
	L 3	PU59152-6R8J	PEAKING COIL
	L 4	PU59152-6R8J	PEAKING COIL
	L 6	PU59152-6R8J	PEAKING COIL
	L 9	PU59152-221J	PEAKING COIL
	BPF1	PU58226	BAND PASS FILTER
	CF1	PU49295	CERAMIC FILTER, 5.5MHZ
	CF2	PU49295-2	N FILTER, 5.5MHZ
	CF4	PU52775	CERAMIC FILTER, 5.74MHZ
	CF5	PU52775-2	CERAMIC FILTER, 5.74M DET
	SAW1	PU32987-7	SAW FILTER
	T 3	PU59488	COIL, 5.5M SOUND 1 DET
⚠	T 4	PU59308	COIL, VCO
	T 5	PU59489	COIL, 5.74M SOUND 2 DET
	T 6	PU59490	COIL, 54.7K DET
	T 7	PU59243	F.HTRAP
	T 8	PU59243	F.HTRAP
	CN 1	PU58929-3	CAP HOUSING
	CN 2	PU58929-8	CAP HOUSING
	CN 3	PU59374	JACK

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16. TIMER BOARD ASSEMBLY <15>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB20002Q-01	TIMER BOARD ASSY
	IC2	S-8053ALB	IC
	IC101	UPD75216ACW-037	IC
	IC102	UPD82C43CY	IC
	Q1	2SC1317(RS)	TRANSISTOR
	Q2	2SC3311A(RS)	TRANSISTOR
	Q3	2SC3311A(RS)	TRANSISTOR
	Q6	DTC124ES	TRANSISTOR
	Q7	DTC124ES	TRANSISTOR
	Q101	DTC124ES	TRANSISTOR
	Q102	DTC124ES	TRANSISTOR
	Q104	2SC3311A(RS)	TRANSISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	D1	MTZJ5.1B	ZENER DIODE
	OR	RD5.1ES-T1B2	ZENER DIODE
	D2	1SS133	DIODE
	D3	1SS133	DIODE
	D5	RD9.1ES-T1B2	ZENER DIODE
	OR	HZS9.1EB2	ZENER DIODE
	D6	DA210S	DIODE
	D7	MTZ8.2A	ZENER DIODE
	OR	MTZ8.2B	ZENER DIODE
	D8	MTZ8.2A	ZENER DIODE
	OR	MTZ8.2B	ZENER DIODE
	D103	1SS133	DIODE
	OR	MA165	DIODE
	D106	1SS133	DIODE
	OR	MA165	DIODE
	D107	1SS133	DIODE
	OR	MA165	DIODE
	D108	1SS133	DIODE
	OR	MA165	DIODE
	D111	1SS133	DIODE
	OR	MA165	DIODE
	R1	QRD161J-222	RESISTOR
	R2	QRD161J-121	RESISTOR
	R3	QRD161J-682	RESISTOR
	R4	QRD161J-103	RESISTOR
	R5	QRD161J-104	RESISTOR
	R6	QRD161J-471	RESISTOR
	R7	QRD161J-151	RESISTOR
	R8	QRD161J-102	RESISTOR
	R9	QRD161J-472	RESISTOR
	R10	QRD161J-474	RESISTOR
	R11	QRD161J-104	RESISTOR
	R12	QRD161J-684	RESISTOR
	R13	QRD161J-332	RESISTOR
	R14	QRD161J-332	RESISTOR
	R15	QRD161J-152	RESISTOR
	R101	QRD161J-102	RESISTOR
	R102	QRD161J-102	RESISTOR
	R103	QRD161J-102	RESISTOR
	R104	QRD161J-472	RESISTOR
	R105	QRD161J-102	RESISTOR
	R106	QRD161J-103	RESISTOR
	R107	QRD161J-103	RESISTOR
	R108	QRD161J-103	RESISTOR
	R109	QRD161J-102	RESISTOR
	R110	QRD161J-102	RESISTOR
	R111	QRD161J-102	RESISTOR
	R113	QRD161J-472	RESISTOR
	R114	QRD161J-472	RESISTOR
	R115	QRD161J-472	RESISTOR
	R116	QRD161J-472	RESISTOR
	R117	QRD161J-472	RESISTOR
	R118	QRD161J-102	RESISTOR
	R119	QRD161J-472	RESISTOR
	R120	QRD161J-472	RESISTOR
	R121	QRD161J-472	RESISTOR
	R122	QRD161J-472	RESISTOR
	R125	QRD161J-102	RESISTOR
	R131	QRD161J-472	RESISTOR
	R132	QRD161J-472	RESISTOR
	R133	QRD161J-472	RESISTOR
	R134	QRD161J-472	RESISTOR
	R135	QRD161J-472	RESISTOR
	R136	QRD161J-472	RESISTOR
	R137	QRD161J-472	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R138	QRD161J-472	RESISTOR
	R139	QRD161J-102	RESISTOR
	R140	QRD161J-472	RESISTOR
	R141	QRD161J-472	RESISTOR
	R142	QRD161J-472	RESISTOR
	R143	QRD161J-472	RESISTOR
	R144	QRD161J-472	RESISTOR
	R145	QRD161J-472	RESISTOR
	R146	QRD161J-472	RESISTOR
	R147	QRD161J-472	RESISTOR
	R148	QRD161J-472	RESISTOR
	R149	QRD161J-102	RESISTOR
	R150	QRD161J-102	RESISTOR
	R152	QRD161J-272	RESISTOR
	R153	QRD161J-102	RESISTOR
	R154	QRD161J-472	RESISTOR
	R155	QRD161J-334	RESISTOR
	R156	QRD161J-222	RESISTOR
	R158	QRD161J-333	RESISTOR
	R159	QRD161J-222	RESISTOR
	R160	QRD161J-472	RESISTOR
	R165	QRD161J-103	RESISTOR
	R166	QRD161J-104	RESISTOR
	R168	QRD161J-683	RESISTOR
	RA101	QRB047J-472	RESISTOR ARRAY
		OR QRB049J-472	RESISTOR ARRAY
		OR QRB049J-472C	RESISTOR NETWORK
	RA103	QRB047J-333	RESISTOR ARRAY
		OR QRB049J-333	RARRAY
		OR QRB049J-333C	RESISTOR NETWORK
	RA104	QRB087J-224	RESISTOR ARRAY
		OR QRB089J-224	RESISTOR ARRAY
		OR QRB089J-224C	RESISTOR NETWORK
	RA105	QRB067J-104	RESISTOR ARRAY
		OR QRB069J-104	RESISTOR NETWORK
		OR QRB069J-104C	RESISTOR NETWORK
	RA106	QRB047J-224	RESISTOR NETWORK
		OR QRB049J-224	RESISTOR NETWORK
		OR QRB049J-224C	RESISTOR NETWORK
	C1	QETC1CM-336	E CAPACITOR
	C2	QETA1HM-335	E CAPACITOR
	C3	QETA1AM-336	E CAPACITOR
	C4	QETA0JM-336	E CAPACITOR
	C5	QCBB1HJ-102	CAPACITOR
	C6	QCVB1CM-103	CAPACITOR
	C7	QETA1CM-106	E CAPACITOR
	C8	PU59421-104	E CAPACITOR
	C9	QETA1CM-106	E CAPACITOR
	C101	PU57672-200	TRIMMER CAPACITOR, TIMER CLOCK
	C102	QCT30CH-120	CAPACITOR
	C103	QCSB1HJ-390	CAPACITOR
	C104	QCSB1HJ-150	CAPACITOR
	C105	QCC31CK-104	CAPACITOR
		OR QCC31CJ-104	CAPACITOR
	C107	QCC31CK-473	CAPACITOR
	L1	PU48530-101K	PEAKING COIL
⚠	X101	PU58394	CRYSTAL RESONATOR
⚠	X102	PU60226	CRYSTAL RESONATOR
	CL1	PU59154	WIRE CLAMP
	TP1	PU56008	TEST PIN
	TP2	PU56008	TEST PIN
	TP3	PU56008	TEST PIN
	CN1	PU58931-22	CAP HOUSING

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	CN2	PU58929-13	HOUSING
	CN3	PU58844-107	CAP HOUSING
	CN4	PU58844-104	CAP HOUSING

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17. JUNCTION BOARD ASSEMBLY <16>

	PWBA	PB20072B	JUNCTION BOARD ASSY
	CN1	PU58929-18	HOUSING
	CN2	PU58929-20	HOUSING
	CN4	PU59555-106	CAP HOUSING
	CN5	PU58844-104	CAP HOUSING
	CN6	PU58844-108	CAP HOUSING
	CN7	PU59555-112	CAP HOUSING
	CN8	PU58798-122	CAP HOUSING

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18. VPS BOARD ASSEMBLY, (EG ONLY) <18>

	PWBA	PU36127C	VPS BOARD ASSEMBLY
	IC1	HD49703NT	IC
	IC2	M5278L05	IC
	Q1	2SB641R,S	TRANSISTOR
	Q2	2SC3327A	TRANSISTOR
		OR 2SC2878A	TRANSISTOR
	Q3	2SD637R,S	TRANSISTOR
	D1-D5	1SS133	DIODE,X5
	R1	QRD161J-103	RESISTOR
	R2	QRD161J-103	RESISTOR
	R3	QRD161J-102	RESISTOR
	R4	QRD161J-102	RESISTOR
	R5	QRD161J-102	RESISTOR
	R6	QRD161J-473	RESISTOR
	R7	QRD161J-103	RESISTOR
	R8	QRD161J-391	RESISTOR
	R9	QRD161J-562	RESISTOR
	R10	QRD161J-102	RESISTOR
	R11	QRD161J-473	RESISTOR
	R12	QRD161J-562	RESISTOR
	R13	QRD161J-105	RESISTOR
	R14	QRD161J-472	RESISTOR
	R15	QRD161J-472	RESISTOR
	R16	QRD161J-472	RESISTOR
	R17	QRD161J-472	RESISTOR
	R18	QRD161J-562	RESISTOR
	R19	QRD161J-563	RESISTOR
	R20	QRD161J-222	RESISTOR
	R21	QRD161J-222	RESISTOR
	R22	QRD161J-222	RESISTOR
	R23	QRD161J-222	RESISTOR
	R24	QRD161J-472	RESISTOR
	R25	QRD161J-682	RESISTOR
	R26	QRD161J-472	RESISTOR
	R27	QRD161J-102	RESISTOR
	R28	QRD161J-103	RESISTOR
	R29	QRD161J-103	RESISTOR
	R30	QRD161J-184	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R31	QRD161J-103	RESISTOR
	R32	QRD161J-332	RESISTOR
	R33	QRD161J-561	RESISTOR
	R34	QRD161J-474	RESISTOR
	R35	QRD161J-474	RESISTOR
	R36	QRD161J-332	RESISTOR
	R37	QRD161J-103	RESISTOR
	RA1	QRB049J-224C	RESISTOR ARRAY
	C1	QETC1CM-336	E CAPACITOR
	C2	QCS31HJ-681	CAPACITOR
	C3	QETC1CM-106	E CAPACITOR
	C4	QCS31HJ-391	CAPACITOR
	C5	QCT25CH-390	CAPACITOR
	C6	QFN31HJ-103	M CAPACITOR
	C7	QFN31HJ-102	M CAPACITOR
	C8	QFN31HJ-102	M CAPACITOR
	C9	QETC1CM-336	E CAPACITOR
	C10	QETC1CM-336	E CAPACITOR
	C11	QCF31HP-473	CAPACITOR
	C12	QETC1CM-336	E CAPACITOR
	C13	QETC1CM-336	E CAPACITOR
	C14	QETC1CM-336	E CAPACITOR
	C15	QCS31HJ-391	CAPACITOR
	C16	QETC1HM-335	E CAPACITOR
	C17	QETC1HM-105	E CAPACITOR
	C18	QETC1HM-106	E CAPACITOR
	C19	QCT25CH-390	CAPACITOR
	C20	QCT25CH-150	CERAMIC CAP
	C21	QETC1CM-336	E CAPACITOR
	C22	QCT25CH-100	CAPACITOR
	T1	PU58484	COIL
	TP1-TP6	PU56008	TEST-PIN,X6
	CN1	PU58929-3	CAP HOUSING
	CN2	PU58844-4	CAP HOUSING

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19. POWER TRANSISTOR BOARD ASSEMBLY <19>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB40002B	POWER TRANSISTOR BOARD ASSY
	Q7	2SD1785	TRANSISTOR
	Q8	2SD1761(DE)	TRANSISTOR
	Q9	2SD1785	TRANSISTOR
	Q10	2SD1785	TRANSISTOR
	R22	QRD142J-R47S	RESISTOR
	R23	QRD142J-R47S	RESISTOR
⚠	HS1	PQ31808	HEAT SINK
	SCW1	DPSP3010Z	SCREW,X4 FOR Q7-Q10

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20. DIGITAL BOARD ASSEMBLY <20>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB20216A-01	DIGITAL BOARD ASSEMBLY
	IC1	VC2058	IC
	IC2	MB40176	IC
	IC3	UPD41221C-70	IC
	OR	UPD41221C-90	IC
	IC4	UPD41221C-70	IC
	OR	UPD41221C-90	IC
	IC5	UPD41221C-70	IC
	OR	UPD41221C-90	IC
	IC6	UPD41221C-70	IC
	OR	UPD41221C-90	IC
	IC7	UPD41221C-70	IC
	OR	UPD41221C-90	IC
	IC8	UPD41221C-70	IC
	OR	UPD41221C-90	IC
	Q1	2SC1740S(RS)	TRANSISTOR
	OR	2SC3311(RS)	TRANSISTOR
	Q2	2SA933S(RS)	TRANSISTOR
	OR	2SA1309R,S	TRANSISTOR
	Q3	2SC1740S(RS)	TRANSISTOR
	OR	2SC3311(RS)	TRANSISTOR
	Q4	2SC3354	TRANSISTOR
	Q5	2SC3354	TRANSISTOR
	Q6	2SC3354	TRANSISTOR
	Q7	2SC3354	TRANSISTOR
	Q8	2SC1740S(RS)	TRANSISTOR
	OR	2SC3311(RS)	TRANSISTOR
	Q9	2SC1740S(RS)	TRANSISTOR
	OR	2SC3311(RS)	TRANSISTOR
	Q10	DTC114ES	TRANSISTOR
	D2	11ES2	DIODE
	R1	QRD161J-102	RESISTOR
	R2	QRD161J-102	RESISTOR
	R3	QRD161J-102	RESISTOR
	R4	QRD161J-221	RESISTOR
	R5	QRD161J-332	RESISTOR
	R6	QRD161J-102	RESISTOR
	R7	QRD161J-151	RESISTOR
	R8	QRD161J-221	RESISTOR
	R9	QRD161J-102	RESISTOR
	R10	QRD161J-102	RESISTOR
	R11	QRD161J-102	RESISTOR
	R12	QRD161J-223	RESISTOR
	R14	QRD161J-104	RESISTOR
	R15	QRD161J-153	RESISTOR
	R16	QRD161J-472	RESISTOR
	R17	QRD161J-561	RESISTOR
	R18	QRD161J-152	RESISTOR
	R19	QRD161J-332	RESISTOR
	R20	QRD161J-223	RESISTOR
	R21	QRD161J-681	RESISTOR
	R22	QRD161J-104	RESISTOR
	R23	QRD161J-473	RESISTOR
	R24	QRD161J-221	RESISTOR
	R25	QRD161J-822	RESISTOR
	R26	QRD161J-153	RESISTOR
	R27	QRD161J-102	RESISTOR
	R28	QRD161J-104	RESISTOR
	R29	QRD161J-363	RESISTOR
	R30	QRD161J-102	RESISTOR
	R31	QRD161J-472	RESISTOR
	R32	QRD161J-472	RESISTOR
	R33	QRD161J-472	RESISTOR
	R34	QRD161J-103	RESISTOR
	R35	QRD161J-103	RESISTOR
	R36	QRD161J-472	RESISTOR
	R37	QRD161J-472	RESISTOR
	R38	QRD161J-472	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R39	QRD161J-103	RESISTOR
	R40	QRD161J-103	RESISTOR
	C1	QCBB1HJ-820	CAPACITOR
	C2	QCVB1CM-103	CAPACITOR
	C3	QEK61CM-476	E CAPACITOR
	C4	QCVB1CM-103	CAPACITOR
	C5	QCVB1CM-103	CAPACITOR
	C6	QCVB1CM-103	CAPACITOR
	C7	QCVB1CM-103	CAPACITOR
	C8	QCVB1CM-103	CAPACITOR
	C9	QCVB1CM-103	CAPACITOR
	C10	QCVB1CM-103	CAPACITOR
	C11	QCVB1CM-103	CAPACITOR
	C12	QEK61CM-476	E CAPACITOR
	C13	QEJ41AM-106	TANTAL CAP
	C14	QEK61HM-105	E CAPACITOR
	C15	QEK61HM-105	E CAPACITOR
	C16	QEK61HM-105	E CAPACITOR
	C17	QEJ41AM-106	TANTAL CAP
	C18	QEJ41AM-106	TANTAL CAP
	C19	PU59971-104	CAPACITOR
	C20	PU59971-104	CAPACITOR
	C21	PU59971-104	CAPACITOR
	C22	PU59971-104	CAPACITOR
	C23	QEJ41AM-106	TANTAL CAP
	C24	QCBB1HJ-102	CAPACITOR
	C25	QEN61CM-336	NP E CAPACITOR
	C27	QCSB1HJ-220	CAPACITOR
	C28	QCSB1HJ-200	CAPACITOR
	C32	QCBB1HJ-151	CAPACITOR
	L1	PU59152-150J	PEAKING COIL
	L2	PU59152-270J	PEAKING COIL
	L3	PU59152-330J	PEAKING COIL
	LPF1	PU59542	LOW PASS FILTER
	LC1	PU59736-331	N FILTER
	LC2	PU59736-331	RESISTOR
	LC3	PU59736-331	N FILTER
	LC4	PU59736-331	N FILTER
	LC5	QRD161J-103	RESISTOR
	LC6	PU59736-331	N FILTER
	LC7	PU59736-223	N FILTER
	LC8	PU59736-223	N FILTER
	LC9	PU59736-223	N FILTER
	LC10	PU59736-223	N FILTER
	LC11	PU59736-331	N FILTER
	LC12	PU59736-331	N FILTER
	LC13	PU59736-331	N FILTER
	LC14	PU59736-331	N FILTER
	LC15	PU59736-331	N FILTER
	LC16	PU59736-331	N FILTER
	LC17	PU59736-331	N FILTER
	LC18	PU59736-223	N FILTER
	LC19	PU59736-223	N FILTER
	LC20	PU59736-223	N FILTER
	LC21	PU59736-223	N FILTER
	LC22	PU59736-223	N FILTER
	T1	PU60388	LC FILTER
	T2	PU60388	LC FILTER
	SLD1	PU60389-1-1	SHIELD CASE 1
	SLD2	PU59552	SHIELD CASE 2
	SLD3	PU36444-1-1	SHIELD CASE 3
	CN1	PU58931-8	HOUSING
	CN2	PU58929-4	CAP HOUSING
	CN3	PU58844-104	CAP HOUSING
	CN4	PU58844-102	CAP HOUSING
	CN5	PU58844-104	CAP HOUSING
	CN6	PU58844-2	CAP HOUSING

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21. OPERATION BOARD ASSEMBLY <22>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB20092B	OPERATION BOARD ASSY
	IC201	GP1U501	INFRATED RAYS UNIT
	D200	MTZ5.1B	ZENER DIODE
	D201	SLV-31MC3F	LE DIODE
	D202	SLV-31MC3F	LE DIODE
	D208	SLH-34VC3F	LE DIODE
	D209	SLH-34VC3F	LE DIODE
	D210	SLH-34VC3F	LE DIODE
	D211	SLH-34VC3F	LE DIODE
	R201	QRD161J-471	RESISTOR
	R208	QRD161J-222	RESISTOR
	R209	QRD161J-222	RESISTOR
	R210	QRD161J-332	RESISTOR
	R213	QRD161J-821	RESISTOR
	R215	QRD161J-222	RESISTOR
	R216	QRD161J-222	RESISTOR
	R217	QRD161J-332	RESISTOR
	R218	QRD161J-472	RESISTOR
	R219	QRD161J-103	RESISTOR
	R220	QRD161J-223	RESISTOR
	R404	PU57928	V RESISTOR, PHONES LEVEL
	C301	QCBB1HJ-102	CAPACITOR
	LC201	PU59326-223SL	N FILTER
	LC202	PU59326-223SL	N FILTER
	S201	PU57551	SWITCH(TACT), POWER
	S202	PU57551	SWITCH(TACT), EJECT
	S204	PU57551	SWITCH(TACT), STOP
	S205	PU57551	SWITCH(TACT), PAUSE
	S206	PU57551	SWITCH(TACT), PLAY
	S207	PU57551	SWITCH(TACT), REW
	S208	PU57551	SWITCH(TACT), FF
	S209	PU57551	SWITCH(TACT), REC
	S214	PU57551	SWITCH(TACT), A DUB
	CL1	PU59311-2	WIRE CLAMP
	HD1	PQ31764	SHADE (LED)
	HD2	PQM30038-2-2	LED HOLDER,X4
	J401	PU58356-2	JACK(HEADPHONE)
	J402	PU58355-2	MIC JACK
	CN1	PU59513-4	CAP HOUSING
	CN3	PU58844-104	CAP HOUSING
	CN4	PU59513-3	CAP HOUSING
	CN5	PU59513-4	CAP HOUSING

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22. DISPLAY BOARD ASSEMBLY <27>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB20041A	DISPLAY BOARD ASSY,E
		PB20041C	DISPLAY BOARD ASSY,EG
	IC1	UPD7538ACU-214	IC
	OR	UPD7538ACU-216	IC
	IC2	BA618	IC
	IC101	MSC1124BRS	IC
	Q1	DTC124EF	TRANSISTOR
	Q2	DTA114EF	TRANSISTOR
	D1	RD8.2E-T1B2	ZENER DIODE
	D2	1SS132	DIODE
	D3	1SS132	DIODE
	D4	1SS132	DIODE
	D5	1SS132	DIODE
	D6	1SS132	DIODE
	D7	RD3.0ES-T1B2	ZENER DIODE
	D101	RD24E-T1B2	ZENER DIODE
	D212	SLH-34VC3F	LE DIODE
	D213	SLH-34VC3F	LE DIODE
	D214	SLH-34VC3F	LE DIODE
	D215	SLH-34VC3F	LE DIODE
	R1	QRD161J-102	RESISTOR
	R2	QRD161J-103	RESISTOR
	R3	QRD161J-103	RESISTOR
	R4	QRD161J-102	RESISTOR
	R5	QRD161J-102	RESISTOR
	R6	QRD161J-103	RESISTOR
	R7	QRD161J-472	RESISTOR
	R8	QRD161J-273	RESISTOR
	R9	QRD161J-104	RESISTOR
	R10	QRD161J-104	RESISTOR
	R11	QRD161J-102	RESISTOR
	R12	QRD161J-102	RESISTOR
	R13	QRD161J-102	RESISTOR
	R14	QRD161J-102	RESISTOR
	R15	QRD161J-102	RESISTOR
	R16	QRD161J-102	RESISTOR
	R17	QRD161J-102	RESISTOR
	R19	QRD161J-102	RESISTOR
	R20	QRD161J-102	RESISTOR
	R21	QRD161J-102	RESISTOR
	R102	QRD161J-104	RESISTOR
	R103	QRD161J-103	RESISTOR
	R104	QRD161J-151	RESISTOR
	R105	QRD161J-103	RESISTOR
	R106	QRD161J-104	RESISTOR
	R107	QRD161J-151	RESISTOR
	R108	QRD161J-103	RESISTOR
	R109	QRD161J-103	RESISTOR
	R110	QRD161J-103	RESISTOR
	C1	QCBB1HJ-101	CAPACITOR
	C2	QCBB1HJ-101	CAPACITOR
	C3	QER40JM-476	E CAPACITOR
	C5	QER41VM-226	E CAPACITOR
	C6	QCF11HP-103	CAPACITOR
	C7	QCBB1HJ-102	CAPACITOR
	C8	QCVB1CM-103	CAPACITOR
	C9	QCVB1CM-103	CAPACITOR
	C102	QER41HM-475	E CAPACITOR
	C103	QER41HM-105	E CAPACITOR
	C104	QER41HM-105	E CAPACITOR
	C105	QER41CM-106	E CAPACITOR
	C106	QER41CM-106	E CAPACITOR
	C107	QFJ41HJ-223	M CAPACITOR
	C108	QER41HM-225	E CAPACITOR
⚠	CF1	PU59109	RESONATOR
	FDP1	PU59952-2	FLUORESCENT DISPLAY PANEL,E
		PU59952-3	FLUORESCENT DISPLAY PANEL,EG
	HD1	PQ31309	FDP HOLDER (L)
	HD2	PQ31310	FDP HOLDER (R)
	HD3	PQ43223	LED HOLDER

23. SUB JUNCTION BOARD ASSEMBLY <38>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB30017A	SUB JUNCTION BOARD ASSY
	CN1	PU58798-120	FFC CONNECTOR

24. CONTROL BOARD ASSEMBLY <39>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB10044B-01	CONTROL BOARD ASSY
	D401	1SS133	DIODE
	D402	1SS133	DIODE
	R211	QRD162J-472	RESISTOR
	R212	QRD162J-103	RESISTOR
	R221	QRD162J-563	RESISTOR
	R222	QRD162J-223	RESISTOR
	R305	QRD162J-102	RESISTOR
	R306	QRD162J-223	RESISTOR
	R307	QRD162J-223	RESISTOR
	R401	PU59092-12	V RESISTOR, SHARPNESS (10K)
	R402	PU59092-13	V RESISTOR, V LOCK ADJ (500K)
	R405	PU59092-1	SLIDE CTL, HIFI REC LEV(2K)
	S1	PU59092-14	SWITCH(TACT), 1/SUN
	S2	PU59092-14	SWITCH(TACT), 2/MON
	S3	PU59092-14	SWITCH(TACT), 3/TUE
	S4	PU59092-14	SWITCH(TACT), 4/WED
	S5	PU59092-14	SWITCH(TACT), 5/THU
	S6	PU59092-14	SWITCH(TACT), 6/FRI
	S7	PU59092-14	SWITCH(TACT), 7/SAT
	S8	PU59092-14	SWITCH(TACT), 8/1ND/2ND
	S9	PU59092-14	SWITCH(TACT), 9/DAI
	S10	PU59092-14	SWITCH(TACT), 0/AUX
	S11	PU59092-14	SWITCH(TACT), GO-TO
	S13	PU59092-14	SWITCH(TACT), C RESET
	S14	PU59092-14	SWITCH(TACT), DISPLAY
	S15	PU59092-14	SWITCH(TACT), INST REC

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
*	S16	PU59092-14	SWITCH(TACT), TIMER
	S17	PU59092-14	SWITCH(TACT), CH+/NEXT
	S18	PU59092-14	SWITCH(TACT), CH-/BACK
	S19	PU59092-14	SWITCH(TACT), SEARCH
	S20	PU59092-14	SWITCH(TACT), CH
	S21	PU59092-14	SWITCH(TACT), CANSEL/SKIP
	S22	PU59092-14	SWITCH(TACT), STORE
	S23	PU59092-14	SWITCH(TACT), FINE (+)
	S24	PU59092-14	SWITCH(TACT), FINE (-)
	S25	PU59092-14	SWITCH(TACT), C ADJ
	S26	PU59092-14	SWITCH(TACT), PROGRAM
	S27	PU59092-14	SWITCH(TACT), SP/LP
	S210	PU59092-14	SWITCH(TACT), A MONI
	S215	PU59092-14	SWITCH(TACT), TRACK (+)
	S216	PU59092-14	SWITCH(TACT), SLOW (+)
	S217	PU59092-14	SWITCH(TACT), TRACK (-)
	S218	PU59092-14	SWITCH(TACT), SLOW (-)
	S401	PU54440	SWITCH, INPUT SEL
	S402	PU54440	SWITCH, C MEMORY
	S407	PU59092-6	SWITCH, LEVEL IND
	S409	PU54440	SWITCH, ALC
	S410	PU54440	SWITCH, AC ONLINE
	S415	PU54440	SWITCH, MIX
	S417	PU54440	SWITCH, TNR S SEL
	J1	PU36448	FPC
	SPC1	PQM30029-102	SPACER
	WR1	PU60341	FPC
	CN1	PU60329-120	FFC CONNECTOR

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25. UPPER DRUM BOARD <41>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWB1	PDM3017	UPPER DRUM BOARD

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26. PRE/REC AMP BOARD ASSEMBLY <43>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PU36147F-01	PRE/REC AMP BOARD ASSEMBLY
	IC1	HA118019NT	IC
	Q1	DTC144WS	TRANSISTOR
	Q2	DTC144WS	TRANSISTOR
	Q3	2SA1309R,S	TRANSISTOR
	Q6	2SC1740S(QRS)	TRANSISTOR
	D1	MA165	DIODE
		OR 1SS133	DIODE
	D2	MA165	DIODE
		OR 1SS133	DIODE
	D3	MA165	DIODE
		OR 1SS133	DIODE
	R1	QVZ3518-221	V RESISTOR, SP CH-2,Q
	R2	PU57457-221	V RESISTOR, SP CH-1,Q
	R3	QVZ3518-221	V RESISTOR, LP CH-1,Q
	R4	PU57457-221	V RESISTOR, LP CH-2,Q
	R5	QRD161J-184	RESISTOR
	R6	QRD161J-223	RESISTOR
	R7	QRD161J-223	RESISTOR
	R8	QRD161J-393	RESISTOR
	R9	QRD161J-103	RESISTOR
	R10	QRD161J-153	RESISTOR
	R11	QRD161J-103	RESISTOR
	R12	QRD161J-103	RESISTOR
	R13	QRD161J-103	RESISTOR
	R14	QRD161J-223	RESISTOR
	R15	QRD161J-103	RESISTOR
	R17	QRD161J-152	RESISTOR
	R18	QRD161J-332	RESISTOR
	R19	QRD161J-391	RESISTOR
	R20	QRD161J-561	RESISTOR
	R21	QRD161J-561	RESISTOR
	R22	QRD161J-474	RESISTOR
	R24	QRD161J-223	RESISTOR
	R25	QRD161J-272	RESISTOR
	C1	QCVB1CN-103	CAPACITOR
	C2	QFZ0096-224	MM CAPACITOR
	C3	QFZ0096-224	MM CAPACITOR
	C4	QCSB1HJ-220	CAPACITOR
	C5	PU57672-500	TANTAL CAPACITOR, SP CH-2,F0
	C6	QCSB1HJ-390	CAPACITOR
	C7	PU57672-500	TANTAL CAPACITOR, SP CH-1,F0
	C8	QCVB1CN-103	CAPACITOR
	C9	QCVB1CN-103	CAPACITOR
	C10	QFZ0096-224	MM CAPACITOR
	C11	QFZ0096-224	MM CAPACITOR
	C12	QCSB1HJ-330	CAPACITOR
	C13	PU57672-500	TANTAL CAPACITOR, LP CH-1,F0
	C14	QCSB1HJ-390	CAPACITOR
	C15	PU57672-500	TANTAL CAPACITOR, LP CH-2,F0
	C16	QCVB1CN-103	CAPACITOR
	C17	QER60JM-476	E CAPACITOR
	C18	QCF31HP-223	CAPACITOR
	C20	QCBB1HJ-681	CAPACITOR
	C21	QCVB1CN-103	CAPACITOR
	C22	QCVB1CN-103	CAPACITOR
	C23	QEK61HM-104	E CAPACITOR
	C24	QCVB1CN-103	CAPACITOR
	C25	QCBB1HJ-820	CAPACITOR
	C26	QCF31HP-223	CAPACITOR
	C27	QER60JM-476	E CAPACITOR
	C29	QCVB1CN-103	CAPACITOR
	C31	QCSB1HJ-300	CAPACITOR
	C32	QCVB1CN-103	CAPACITOR
	C33	QCF31HP-223	CAPACITOR
	C34	QET60JM-476	E CAPACITOR
	L1	PU54223-101K	PEAKING COIL
	L4	PU54223-560J	PEAKING COIL
	L5	PU54223-101K	PEAKING COIL
	L6	PU54223-101K	PEAKING COIL
	SPC	WBS2600Z	WASHER
	BKT1	PQ42558	PWB BRACKET
	ETH1	PQ40433-2	EARTH LUG
	SCW1	DPSP2606Z	SCREW
	SCW2	DPSP2606Z	SCREW,X2
	SLD1	PU59080	PRE AMP SHIELD (1)
	SLD2	PU59081-1-3	PRE AMP SHIELD (2)

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	SPC1	WBS2600Z	WASHER
	TP	PU57545	TEST PIN, X5
	CN1	PU58844-12	CAP HOUSING
	CN2	PU56258-10	CAP HOUSING
	CN3	PU58844-6	CAP HOUSING

27. DECK TERMINAL BOARD ASSEMBLY <51><53>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PU22329F-02	D.TERM BOARD ASS,Y

– DECK TERMINAL BOARD ASS'Y <51>–

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA1	PU22329B1	DECK TERMINAL BOARD ASSY
	R1	QRD181J-151	RESISTOR
	R3	QRD181J-331	RESISTOR
	PS1	PU60271	PHOTO INTERRUPTER
	CN1	PU58798-17	CAP CONNECTOR

– REC SAFETY BOARD ASS'Y <53> –

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA3	PU22329A3	REC SAFETY BOARD ASSY
	S1	PU58644-1-3	REC SAFETY SWITCH

28. RELAY BOARD ASSEMBLY <52>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA2	PU22329D2	RELAY BOARD ASSY
	LC	PU59809-222T	N FILTER,X2

29. END SENSOR BOARD ASSEMBLY <54>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA4	PU22329A4	END SENSOR BOARD ASSY
	Q1	PN268R-NC	PHOTO TRANSISTOR
	HD1	PQ31047	END SENSOR HOLDER
	WR1	PW30110-26DD885	PARALLEL WIRE
	CN1	PU49215-102	CAP HOUSING

30. CASSETTE HOUSING BOARD <56>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWB1	PB30043	CASSETTE HOUSING BOARD
	Q1	PN268R-NC	PHOTO TRANSISTOR
	R1	QRD161J-471	RESISTOR
	PS1	PU58879	PHOTO INTERRUPTER
	CN1	PU58844-106	CAP HOUSING

31. APC BOARD ASSEMBLY <61>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PU36276B-01	APC BOARD ASSEMBLY
	IC1	HA11247	IC
	Q1	2SC1740S(RS)	TRANSISTOR
	Q3	2SC1740S(RS)	TRANSISTOR
	R1	QRD161J-471	RESISTOR
	R2	QRD161J-561	RESISTOR
	R3	QRD161J-102	RESISTOR
	R4	QRD161J-152	RESISTOR
	R6	QRD181J-103	RESISTOR
	R9	QRD161J-102	RESISTOR
	R10	QRD161J-102	RESISTOR
	R13	QRD182J-332	RESISTOR
	C1	QETC1EM-475	E CAPACITOR
	OR	QET61EM-475	E CAPACITOR
	C2	QCC31CJ-223	CAPACITOR
	OR	QCC31EJ-223	CAPACITOR
	C3	QCSB1HJ-220	CAPACITOR
	C4	QCSB1HJ-620	CAPACITOR
	C5	QCSB1HJ-220	CAPACITOR
	C8	QETA1CM-107	E CAPACITOR
	C9	QCVB1CM-103	CAPACITOR
	C10	QCVB1CM-103	CAPACITOR
	C11	QETC1CM-336	E CAPACITOR
	OR	QET61CM-336	E CAPACITOR
	C12	QCSB1HJ-330	CAPACITOR
	C13	QCVB1CM-103	CAPACITOR
	C14	QETC1EM-475	E CAPACITOR
	OR	QET61EM-475	E CAPACITOR
	L1	PU48530-390J	PEAKING COIL
	L2	PU48530-101K	PEAKING COIL
⚠	X1	PU31449-4K	CRYSTAL RESONATOR
	BKT1	PQ43625	BRACKET(APC)
	SCW1	DPSP2606Z	SCREW
	CN1	PU58844-6	CAP HOUSING

32. DIG. COL. PROCESS BOARD ASSEMBLY <62>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB20217A	DIG.COL.PROCESS BOARD ASSY
	IC1	AN6308	IC
	IC2	AN6308	IC
	Q1	2SC1740S(QRS)	TRANSISTOR
	Q2	2SC1740S(QRS)	TRANSISTOR
	Q4	2SC1740S(QRS)	TRANSISTOR
	Q5	2SC1740S(QRS)	TRANSISTOR
	Q6	2SC1740S(QRS)	TRANSISTOR
	Q7	2SC1740S(QRS)	TRANSISTOR
	R1	QRD161J-223	RESISTOR
	R2	QRD161J-333	RESISTOR
	R3	QRD161J-102	RESISTOR
	R4	QRD161J-102	RESISTOR
	R5	QRD161J-102	RESISTOR
	R6	QRD161J-182	RESISTOR
	R7	QRD161J-391	RESISTOR
	R8	QRD161J-182	RESISTOR
	R9	QRD161J-102	RESISTOR
	R10	QRD161J-102	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R11	QRD161J-182	RESISTOR
	R12	QRD161J-391	RESISTOR
	R13	QRD161J-472	RESISTOR
	R14	QVZ3521-221	V RESISTOR,DIG.COL LEVEL
	R15	QRD161J-181	RESISTOR
	R16	QRD161J-471	RESISTOR
	R17	QRD161J-473	RESISTOR
	R18	QRD161J-223	RESISTOR
	R19	QRD161J-102	RESISTOR
	R20	QRD161J-102	RESISTOR
	R21	QRD161J-820	RESISTOR
	R22	QRD161J-222	RESISTOR
	R23	QRD161J-472	RESISTOR
	R24	QRD161J-472	RESISTOR
	R25	QRD161J-333	RESISTOR
	R26	QRD161J-123	RESISTOR
	R27	QRD161J-122	RESISTOR
	R28	QRD161J-471	RESISTOR
	R29	QRD161J-102	RESISTOR
	R30	QRD161J-222	RESISTOR
	C2	QETC0JM-476	E CAPACITOR
	C3	QCVB1CN-103	CAPACITOR
	C4	QETC1AM-226	E CAPACITOR
	C5	QETC1AM-226	E CAPACITOR
	C6	QCVB1CN-103	CAPACITOR
	C7	QETC0JM-227	E CAPACITOR
	C8	QCVB1CN-103	CAPACITOR
	C9	QCVB1CN-103	CAPACITOR
	C10	QCVB1CN-103	CAPACITOR
	C11	QETC0JM-476	E CAPACITOR
	C12	QCVB1CN-103	CAPACITOR
	C13	QCVB1CN-103	CAPACITOR
	C14	QCVB1CN-103	CAPACITOR
	C15	QCVB1CN-103	CAPACITOR
	C16	QETC0JM-476	E CAPACITOR
	C17	QETC0JM-476	E CAPACITOR
	L1	PU48530-101K	PEAKING COIL
	L2	PU59152-8R2J	PEAKING COIL
	L3	PU59152-8R2J	PEAKING COIL
	L4	PU48530-101K	PEAKING COIL
	LPF1	PU58021-2	LOW PASS FILTER
	OR	PU58021-3	LOW PASS FILTER
	LPF2	PU60547	LOW PASS FILTER
	BPF1	PU57072	BAND PASS FILTER
	DL1	PU60551	1H DELAY LINE
	TP	PU55774	TEST PIN,X2
	CN1	PU58844-2	CAP HOUSING
	CN2	PU58844-2	CAP HOUSING

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33. FUSE BOARD ASSEMBLY <65>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PU59814B	FUSE BOARD ASSEMBLY
	BKT1	PQ31633	BRACKET
⚠	HD1	PU57505	FUSE CLIP, X4
	SCW1	SDST3006Z	SCREW
⚠	F2	QMF51E2-2R5	FUSE,NOT INCL.FUSE BOARD ASSY
⚠	F3	QMF51E2-1R6	FUSE,NOT INCL.FUSE BOARD ASSY

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34. REMOTE CONTROL BOARD ASSEMBLY [RM]

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PQ10543-027	REMOCON BOARD ASSY
	IC1	M50565-016FP	IC
	Q1	2SD601(RS)	TRANSISTOR
	Q2	2SB822(RS)	TRANSISTOR
	LED1	SE303AY	LE DIODE
	LED2	SE303AY	LE DIODE
	D1	MA151WA	DIODE
	D2	MA151A	DIODE
	D3	MA151WK	DIODE
	D4	MA151WK	DIODE
	D5	MA151WK	DIODE
	D6	MA151WK	DIODE
	D7	MA151WK	DIODE
	D8	MA151WK	DIODE
	D9	MA151WK	DIODE
	D10	MA151WK	DIODE
	D11	MA151WK	DIODE
	D12	MA151WK	DIODE
	D13	MA151WK	DIODE
	D14	MA151WK	DIDOE
	D15	MA151WK	DIODE
	D16	MA151WK	DIODE
	D17	MA151WK	DIODE
	D18	MA151WK	DIODE
	D19	MA151WA	DIODE
	X1	CSB400PB1T	CERAMIC RESONATOR
	S129	PQ10355-021	SLIDE SWITCH
	TML1	PQ10355-018	BATTERY TERMINAL, (−)
	TML2	PQ10355-017	BATTERY TERMINAL, (+)

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